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ON
ORTHOPÆDIC ASPECTS OF RHEUMATOID ARTHRITIS.

Delivered at the Royal College of Surgeons of England on Feb. 6th, 1922,

BY ALAN H. TODD, M.S., B.SC. LOND., F.R.C.S. ENG.,

HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND; ORTHOPÆDIC REGISTRAR AND CHIEF ASSISTANT, FRACTURE DEPARTMENT, GUY'S HOSPITAL; VISITING ORTHOPÆDIC SURGEON, WEST KENT GENERAL HOSPITAL; ASSISTANT SURGEON, QUEEN'S HOSPITAL FOR CHILDREN, ETC.

THE term "rheumatoid arthritis," admittedly unscientific and rather vague, was formerly employed almost as a synonym for osteo-arthritis; the two conditions are very likely only variants of what is fundamentally one disease, having different manifestations under different conditions, much as gout has, and many other diseases. Indeed, the trend of modern research is rather to confirm that conception. By common consent, however, the phrase "rheumatoid arthritis" has now come to be applied exclusively to one particular group of cases, which has certain definite characteristics.

CHARACTERISTICS OF TRUE RHEUMATOID ARTHRITIS.

The disease is a polyarthritis, affecting women more often than men, in the proportion of 3 : 1; not confined to the elderly, it occurs frequently in the young and middle-aged.

It is probably directly due to infection of the joints, and it is certainly directly associated with the presence of foci of infection in various parts of the body. It tends to undergo alternating periods of activity and quiescence, eventually approaching some degree of spontaneous cure, at the expense of marked limitation of function in the affected joints, impairment of bodily functions in general, and sometimes the production of characteristic deformities. In the active phases the joints display the classical signs of inflammation, and in acute cases the constitutional signs of inflammation are present as well.

Every case of rheumatoid arthritis that we see raises three distinct questions for consideration—viz., (1) preventive treatment; (2) removal of the cause of the disease in an established case; and (3) restoration of function in damaged parts, especially in the limbs. Detection and destruction of the fundamental cause of the disease is, of course, of paramount importance to the patient; it is both unscientific and unsatisfactory merely to treat results. The task is not easy; it demands thorough teamwork—physician, bacteriologist, clinical chemist, radiologist, dentist, throat surgeon, and possibly other specialists, must all collaborate in the investigation. The problem which the orthopædic surgeon is asked to tackle is that of correcting the deformities, and restoring function afterwards, and it is with this aspect of the whole question that I shall deal in this lecture.

An orthopædic surgeon seldom sees a case of rheumatoid arthritis free from deformity, and I wish emphatically to say that this should not be so; all deformity in rheumatoid arthritis is preventable. One constantly sees patients who have been under treatment for months, or even years, without any attempt having been made, by splints or otherwise, to prevent or correct deformity. The deforming process is so slow that its presence is apt to be overlooked, but it is sure. It should be regarded as an invariable factor in the disease, and preventive treatment should always be adopted in consequence.

CAUSES OF DEFORMITIES.

The deformities are the result of muscular spasm, faulty position, and eventually, anatomical changes in and around the joints. Muscular spasm is the factor that first comes into play, in the early, acute stage of the disease; it persists for a very long time because pain on attempting movement also persists. As a general rule, it produces a flexional deformity, as in any other painful arthritis, because (*a*) the flexor muscles are stronger than the extensors, and (*b*) slight flexion is the most capacious and the most comfortable position for most joints. The spasm of rheumatoid arthritis is characterised by being very profound; light surgical anæsthesia is not enough to abolish it in many cases, and very often the persistence of the spasm under such anæsthesia is mistaken by the inexperienced for the presence of structural shortening of the muscles and other soft parts, or even for adhesions in the joints or their capsules. Mere deepening of the anæsthesia, however, without any manipulation, serves to prove that the condition is one of spasm only, for, as a rule, the muscles suddenly give way of themselves, and the limbs become straight. It is important to bear in mind that the spasm is the result of the rubbing together of inflamed articular surfaces; it follows that manipulations of any kind, even under anæsthesia, are liable to cause pain, to increase the spasm, and possibly to light up the disease.

Faulty Posture.

Faulty posture is in part deliberately or unconsciously assumed by the patient, and in part produced, in many cases, by his attendants. In the acute stage of the illness, a patient assumes the position of rest or greatest comfort, which is generally that of slight flexion of his various joints. Such an attitude is incompatible with proper functioning of the joints in activity, and therefore it is necessary to maintain all joints in their position of activity throughout the active stage of the disease. The neglected rheumatoid patient is, in short, the embodiment of the resting position, and it is the surgeon's business to convert him or her into a presentation of the position of activity. We have a good example of the perpetuation of the position of rest in the case of feet. (Fig. 1.) If a person has rheumatoid arthritis in his feet, and yet is able to walk about, he finds his feet painful; he therefore turns them outwards, into the valgus position, to lock the joints and render them less painful. At first he maintains this position by muscular action (acute spasmodic valgus); later, inflammatory periarticular adhesions form, and the feet pass into the stage of organically-stiff flat feet. To correct the position at an early stage mere anæsthesia would suffice; at the later, manipulation would also be necessary to overcome the adhesions. But my main point is that the whole process is unnecessary, as the deformity is perfectly preventable.

FIG. 1.

Deformed feet before and after correction.

Disability is largely determined by the habitual attitude of a patient. If he always carries his arm in a sling, with the hand dropping down, he will gradually develop a fixed ulnar deflection of the wrist, and in all probability some degree of pronation of the forearm as well. If he is always sitting up in bed, or in an invalid chair, he will inevitably get flexion of the hips and be unable to lie down without raising his knees. If the nurse supports his knees with a well-meant pillow beneath them, flexional deformity of the knees will be the price of comfort. Unless the feet are

supported by foot-rests or some form of bed-splint, the extensor muscles will sooner or later become tired of holding them up at a right angle and the feet will drop down and become stiff in equinus; if the weight of the bed-clothes is allowed to press upon them, unsupported by a cradle, this will happen all the sooner, but it is important to emphasise that even with a cradle, deformity will always occur unless a splint or foot-rest be employed as well. (Fig. 2.)

FIG. 2.

Blocked-leather night-boot, for preventing decubitus; more comfortable than an ordinary back-splint and foot-piece.

PATHOLOGICAL ANATOMY.

When a joint has been continuously flexed for some length of time adaptive changes of great importance take place in the soft tissues about it. The extensor muscles necessarily become stretched and weakened in consequence, and the flexor muscles become shortened; it is commonly said that contracture of them occurs; this is probably true, but many cases commonly regarded as examples of physical change in the muscles are really only examples of profound spasm. I believe that contracture is much more rare than it is usually said to be. As far as we know, spasm of muscle cannot persist for years, but the deformity of joints persists long after the pain that first set up the muscular shortening has passed off; the flexion may, of course, be maintained by soft parts other than muscle, but it seems very unlikely that muscles would escape a pathological process common to all other neighbouring mesoblastic structures. At any rate, the practical point is this: the shortening of the muscles can always be overcome by gradual stretching with weights or splints and is never enough to compel operative interference, though the latter may sometimes be expedient for economic reasons.

Adaptive shortening of the other soft parts about the flexed joints is of the utmost practical importance. The joint-capsule, in one class of case, becomes greatly contracted and densely adherent to the structures inside the joint. Some cases of rheumatoid arthritis are characterised by chronic synovitis of the joints, and some by dry arthritis; contracture and adherence of the joint-capsule take place in the "dry" variety, but is never seen in the joints which exhibit synovitis. In the dry type of case, again, the capsule is liable to become not only contracted but also thickened and fibrotic, whilst the interior of the joint is filled with fibro-fatty material; the capsule adheres to this pathological material rather than to the normal joint-contents.

The vessels and nerves adjacent to the joint, upon its concavity, also undergo adaptive shortening. This fact is of great practical importance; the danger of excessive stretching of these structures, or even of rupturing them, constitutes the main risk in rapidly straightening a flexed joint. In the case of the knee the nerves are more easily damaged than the vessels, though both are vulnerable; it appears always to be the external popliteal nerve that suffers and never the internal, though I cannot say why. I have seen several cases where the nerve has been temporarily paralysed after manipulative straightening of a flexed rheumatoid knee, and in some instances the flexion has been less than 30 degrees. Such stretching does not occur when knees flexed to this extent from other causes are made straight, and I was puzzled at first to know why paralysis occurred, especially as correction had been quite gently performed. It seemed obvious that there must be some peculiarity about the pathological anatomy of the rheumatoid joints that produced the condition. A study of museum specimens, and some observations made at operation, afforded me the explanation. The nerves are not free to stretch as they are in normal cases. In cases of the dry type they are often bound firmly to the posterior aspect of the knee-joint by strong inflammatory adhesions; where synovitis is a feature adhesion never occurs, and rapid straightening can be safely carried out, as far as this question is concerned. The liability to nerve-stretching is not confined to cases where the flexion of the knee is considerable, or where much force is required to correct the deformity; it often occurs where joints have straightened out very easily, with nothing approaching a sudden "scrunch" or giving-way as the adhesions yielded. It is consoling, however, to know that the paralysis is usually of a mild and transitory character; I do not remember a case in which it has lasted three months.

The vessels stretch more easily than the nerves, but should never be subjected to sudden violence; cases have been recorded in which the main vessels (usually the veins) have been ruptured in forcible movements of the hip, knee, and shoulder, and death has resulted. In straightening a bent limb by manipulation under anæsthesia careful watch has to be kept throughout on the pulse at the periphery, and the straightening must be stopped if it fails or the colour of the toes or fingers becomes impaired. If the limb is fixed for a few weeks in the optimum position, the vessels will gradually stretch, and it will then be possible to complete the correction. A knee flexed to 90 degrees, especially one of the "dry" type, should always be straightened in two or more stages.

The joint-capsule becomes organically contracted upon the concavity of a flexed joint of the dry variety. Contracture is rare in the synovitic type. The capsule, being a fibrous structure, does not yield readily to stretching by weight-extension or by any other means. It is contracted, and very often adherent to intra-articular structures as well; it often looks thickened, but is not really so; the microscope shows that it is laden with fat. The condition of the intra-articular ligaments varies considerably. Sometimes they are contracted; they then present a very grave obstacle to reduction of a flexional deformity, for they are exceptionally strong, and hardly yield at all to attempts at stretching by manipulation or weight-extension. One need only allude to the enormous force necessary to rupture a crucial ligament in order to emphasise this point. In other cases they will be found to be largely destroyed; they become softened, frayed, and sometimes worn right through. This occurs more particularly in cases with marked ulceration of the articular surfaces of the joint, and is never seen in cases in which synovial fluid is plentiful.

Ulceration of the articular cartilages always precedes ulceration of the underlying bone, and begins where pressure is greatest. The pressure exerted upon the two inflamed articular surfaces causes most of the pain, and sets up the muscular spasm which, in its turn, produces the deformities. Obviously, the rational line of treatment is, if possible, to separate these surfaces, or at any rate to minimise the amount of interosseous pressure. If two adjacent joint-surfaces have become denuded of cartilage, they must inevitably form adhesions to one another unless they are kept very frequently moving; in rheumatoid arthritis movement is impossible in the ulcerative stage because of the pain, so that raw surfaces generally become adherent, and not infrequently some degree of bony ankylosis occurs. Even when one surface only has been bared, it is possible for adhesions to the opposite articular cartilage to form; the same is true where cartilage has become merely inflamed, and not actually perforated. Bony ankylosis is never dense; the fusion of the bone-surfaces is superficial only, and never complete; patches of fibrous ankylosis are intermingled with it, whilst the subjacent bones are always extremely atrophic. Unless this fact is borne in mind it is possible to do great damage in manipulating what is thought to be merely a "stiff" knee; nothing is easier than to

break down a bony ankylosis in such cases, with the risk of disastrous consequences, in the way of lighting up the disease afresh. It is also well to remember that in the case of knees, fixed patellæ are almost always associated with general contracture and adherence of the whole joint-capsule, and usually with much inflammatory infiltration and formation of adhesions inside the joint. Merely to mobilise, reverse, or remove the patella is therefore not of much use in such instances.

TREATMENT.

Treatment, to be successful, must be based upon a proper appreciation of the pathology of the disease. All the facts here set forth must be borne in mind in planning a line of treatment for any particular case. But there are still other considerations, of which a very important one is the mentality of patients. They are invariably very introspective and after many years of suffering their powers of physical endurance are often small; they are extremely susceptible to surgical shock. Their courage, on the other hand, is often splendid, especially that of the women. Sometimes, however, they become exhausted by their sufferings, and are peevish, unenterprising, and unwilling to endure the least discomfort for the sake of getting better. In other instances frank hysteria is a prominent feature; rheumatoid patients find their disease obtruding itself at every moment, and it is hardly to be wondered at if they sometimes embroider it with a whole array of hysterical symptoms. Nevertheless, the hysterical element in the case must always be very carefully estimated; if a symptom is hysterical physical treatment will fail to cure it *per se*, though it may succeed by virtue of the mental effect incidentally produced. A great number of treatments employed in rheumatoid arthritis act only by suggestion. On the other hand, if the patient's mental condition is adverse, the best possible physical treatment may fail to afford relief. In short, rheumatoid arthritis is a condition in which it is imperative to study the patient, and not the disease.

The fundamental question, as far as physical treatment is concerned, is that of function. We must never be obsessed by mere deformity. It is useless to straighten flexed fingers if they are stiff; they are more useful if left bent. It is useless to straighten bent knees, if the patient's hips are so stiff and painful that she cannot bear to stand. It is useless, again, to straighten a pair of flexed hips, unless they are going to be mobile afterwards, for stiff extended hips mean that the patient will not be able to sit, or to rise without help from the recumbent position. We must always imagine ourselves in the patient's circumstances and then see how far the proposed treatment will help in her daily round of existence.

BEST TIME FOR OPERATION.

Operative intervention should take place, as far as possible: (*a*) when the general condition is good, and (*b*) when the joints are quiescent—that is to say, when constitutional and local infections are minimal. The best and quickest results are obtained when infection is dead, and we have only to deal with residual physical deformities. Evidence of local active infection is a contra-indication to operation on the joint. Heat, redness, and synovial distension all mean that operation (other than mere tapping) must be postponed. So does pain, if it is due to joint-distension, or to the contact of actively inflamed articular surfaces; but pain from the stretching of long-standing adhesions, from muscular fatigue, or from interference with the proper line of weight-transmission, in the case of the lower limbs, is, of course, an indication for treatment. Pyrexia, if slight, need not deter us, but means that we must be careful not to activate the disease. Recent operative interference in some other part of the body is generally a contra-indication for active joint-treatment; if a focus of infectivity has been stirred up, some exacerbation of the joint symptoms will generally ensue, and if the joint itself be attacked by the surgeon at this stage, it is quite likely to become excessively active afterwards, so that its last state is worse than its first.

ORDER OF TREATMENT.

This brings me to the question of whether it is better to remedy the deformities first or to remove any known or suspected foci of infection. I think it is always better to remove the foci of infection first, chiefly because it is very important always to remove the cause of a disease, if we can, and not merely to treat its end-results. Moreover, if deformities are treated first, the patient will very likely refuse to undergo the other operation, whereas she will never refuse treatment of the deformities, which are generally the main reason for her seeking medical advice. Further, if we leave the foci of infection, they may light up at some awkward moment after the joint operation and greatly prejudice the patient's convalescence. The reaction to the lesser operation of removing the foci of infection gives some indication of the reaction that may be expected after the larger operation on the joint; it also shows how active the constitutional infection is, and possibly it brings about some degree of immunisation. Lastly, it is an advantage in many cases to carry out a thorough preliminary treatment of the joint by weight-extension or other means; this can be going on while the teeth, tonsils, &c., are being removed, whereas if the joint were tackled first, the preliminary treatment might possibly be rather cursory.

GENERAL TECHNIQUE OF OPERATIONS.

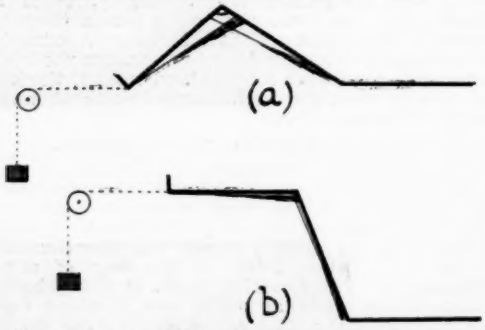
It is extremely important to appreciate that surgical shock and auto-infection following operation do not depend so much upon its magnitude as upon the manner of its performance. A clean-cutting operation always causes less constitutional disturbance than anything in the way of rough manipulation. The breaking down of stiff joints is liable to cause profound shock, and in many cases death has followed within a few hours. The extraction of a number of teeth, also, is prone to cause alarming shock, apart from any question of the risk of lighting up the joint disease; I never countenance the removal of more than five teeth at one sitting in a rheumatoid case, and I always urge that the teeth must be extracted with all possible gentleness. If a number of teeth have to be taken out it is better to give gas and oxygen on several occasions than to "get it over" under general anæsthesia at one sitting. A novice, breaking down a rheumatoid joint, is apt to be encouraged by the ease with which it yields; there is a soft scrunch and the deformity disappears. He is encouraged to go on and do several more; sometimes the patient collapses immediately and sometimes she dies a few hours later, without ever rallying from the shock. *When a patient is feeble manipulative methods should be avoided.* Joints should be straightened either by gradual extension with weights or springs, or else by open operation. One is often asked, "Couldn't you avoid an operation in this patient's case, because she is such a poor feeble old thing?" The reply is, "That is the precise reason why one must operate and not manipulate." A short, simple, open operation involves a far shorter confinement to bed than does correction by weight-extension, and far less shock than any manipulative methods. It is to be remembered, also, that an unconscious patient is still capable of perceiving painful stimuli, so that movements of the patient before, during, and especially after the operation must be carried out with all possible gentleness, and the tissues must be damaged as little as possible. Clean cutting must replace tearing, and the division of joint-capsules and ligaments, when necessary, is to be preferred to violent stretching. The question of anæsthesia presents no difficulty nowadays; these operations are never long, and an able anæsthetist can always pilot a patient safely through; gas and oxygen, and warm ether, have seemed to me to be the two best anæsthetics.

In some cases a course of physical treatment must necessarily precede operative treatment. For instance, in dry arthritis of the knees, with marked flexion, it is unsafe to correct the deformity rapidly for fear, as

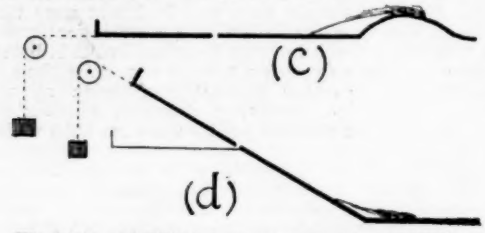
we have seen, of stretching the nerves and vessels. If the flexion exceeds 45 degrees, weight-extension should always, I think, be employed as a preliminary. If the joints are in the subacute condition, again, it is wise to employ continuous extension till they are quiescent and then operation can be undertaken. The muscles will usually stretch without much difficulty. Whether the process is painful or not depends entirely upon how it is carried out. Care must be taken that the force is applied from such a direction that the articular surfaces are pulled apart; that is to say, it must be a purely distractive force, and not one that produces interosseous pressure. Consider, for example, the case of a flexed knee. (Fig. 3.) The structures at the back of the joint are tight, and if an extension cord is merely attached to the foot and pulled, it will cause the head of the tibia to impact on the lower end of the femur, and pain will result. On

FIG. 3.

Weight-Extensions: Right and Wrong.



Knee-joints: (*a*) With interosseous pressure between femur and tibia; cord forms an angle with tibia, and exerts leverage. (*b*) Without interosseous pressure; cord is in line with tibia, and exerts a purely distractive force, without leverage.



Hip-joints: (*c*) With interosseous pressure. (*d*) Without interosseous pressure. Force is distractive.

the other hand, if the hip be deliberately flexed until the leg is parallel with the mattress, and the cord and the tibia are in one and the same straight line, the joint surfaces will be pulled apart and pain will disappear. As the structures behind the joint stretch, the leg is gradually lowered, keeping it parallel with the bed all the time till the flexion is perhaps no more than 5 degrees. At this stage axial traction will fail to correct the small remaining deformity; its vertical component is too small in proportion to its axial component. This fact is not commonly recognised. It is vital, nevertheless, that the last five degrees of flexion of any joint be always removed, or else leverage will come into play and the deformity will recur. To effect this, direct downward pressure must be applied; in the case of the knee, it is best applied by means of a shaped leather knee-cap (with a hole in the centre for the patella), which is placed on top of the knee and from which weights are hung. A homely makeshift is to put a sandbag across the limb just above the patella and a second one below it.

To make extension as effective as possible, friction must be avoided: the limb must therefore be suspended and not allowed to rest on the bedclothes. As the adductors are often contracted, it is an advantage to apply traction in the widest possible abduction. For this purpose I have had a special cradle made in which both legs can be extended with any desired amount of abduction; the cradle rests firmly on the bed-frame under the mattress, and practically forms a part of the bed, avoiding the necessity of cumbrous attachments, such as a double Balkan frame. The practical rule that must be remembered in fixing up a weight-extension, therefore, is that the cord must always run in the same straight line as the distal of the two bones that enter into the formation of the joint under treatment. Another practical point is that the patient must be kept practically flat on his back throughout the treatment; he must not be propped up on pillows, or else he will develop a contracture of the hips whilst the knees are being cured! He may have one small pillow for his head, and no more. His feet, too, must be supported at right angles, or else contracture of the tendo Achillis will occur.

USE OF APPLIANCES IN CORRECTING DEFORMITY.

If the muscles were the only resisting structures we should never need to operate, except to save time. It takes anything up to three months to stretch contracted knees by weight-extension, whereas judicious myotomies or open tenotomies will enable a patient to be on his feet again in three or four weeks. Besides weight-extension in bed, we can also overcome flexional deformity by spring-pressure or with a rack. A blocked-leather case is applied to the limb above and below the affected joint, with reinforcing steels and a hinge opposite the joint; the hinge is opened out either by a rack or else by a strong spring stretching across the convexity of the joint. (Fig. 4.) This method is usually employed for correcting flexion of the knee and of the elbow; in the case of the lower limb, however, it is open to one very grave objection—viz., that as long as the knee is flexed it is impossible to maintain any effective extension and to relieve interosseous pressure. As soon as the joint is fully extended, extension can be applied to the limb, the body-weight is transmitted entirely through the steels, and the pain ceases. An appliance of this type, therefore, is unsuitable when there is active infection of the joint, though it may be useful when we are dealing with a quiescent case or a residual deformity. Even so, weight-extension in bed is to be preferred as eliminating interosseous pressure, but some patients will not give up the necessary time for it. In the most modern form of this splint there is a rack at the lower end, intended to provide some extension between the knee and ankle, so as to separate the surfaces at the knee whilst keeping the knee-joint of the splint level with the knee-joint of the patient, but I cannot speak from personal experience of this appliance. (Fig. 5.)

Splints that work by spring-traction should always be worn by night as well as by day, or else all the good that is done by day is lost by night. Whatever method of straightening a joint be employed, it must be continued for two or three weeks at least after the joint has been fully extended, in order to stretch the contracted structures well and prevent recurrence.

We are not often asked to overcome deformities in the upper limb, because they do not interfere so materially with function as do those of the lower limb, nor are they so painful, because the factor of interosseous pressure is smaller, there being no weight-bearing. When necessary, however, the same mechanical principles can be applied; shoulders can be abducted by weight-extension, elbows straightened by weights, racks, or springs, and fingers straightened by traction or by means of springs or of racks. The simplest way of extending fingers is by means of the "fiddle" splint, which consists of a large hoop of wire, fixed to the forearm with plaster; each finger is attached to the wire hoop by strapping and elastic. The force is always applied, of course, in line with the distal member of the flexed joint, and as the joint extends the wire hoop is re-adjusted. It is not often, however, that finger-straightening is really necessary; if they are stiff they are more serviceable when left flexed, and if they are not stiff the patients can work up a surprising amount of mobility if they persevere

in their efforts to use them, whereas a period of fixation in splints is liable to render them stiff, though straight. Before tackling crooked fingers, one must always go particularly carefully into the question of function; a woman whose hands were as badly crippled as any that I have seen told me that she could do all the work of her house, with the sole exception of wringing clothes after having washed them! (Figs. 6 and 7.)

THE USE OF APPLIANCES IN PREVENTING INTEROSSEOUS PRESSURE.

So much for the use of appliances in correcting deformity. We come now to a second and more important one, that of preventing interosseous pressure. (The Germans call it "Entlastung," which may perhaps be conveniently translated "de-stressing.") In the case of the lower limbs, the interosseous pressure is chiefly the result of the body-weight, reinforced, of course, if pain is present, by muscular spasm. There can be no possible doubt that the transmission of stress through any inflamed joint, no matter what the cause of the arthritis may be, is most prejudicial to the natural processes of repair. Complete fixation of an inflamed joint is admirable, but is not enough; abolition of stress is necessary as well. Apart from any question of constitutional illness resulting from pain and interosseous pressure, the physical stress seems in itself to keep up the inflammation in a remarkable degree. For this reason an active tuberculous spine cannot be treated with success if the patient is sitting up, no matter how well a spinal splint may be applied; recumbency is necessary in addition to relieve the pressure. The same principle must be applied to rheumatoid joints in the lower extremity. They must first be straightened and then they must be kept straight and rested and relieved of weight. The simplest way of attaining this object is to make a splint in which the weight is transmitted from the ischial tuberosity to the ground by means of steels which are slightly longer than the limb itself. It is obvious, of course, that effective de-stressing is only possible when the limb is quite straight, so that the patient must always walk with a stiff knee. The oldest pattern of this splint is the Thomas knee-splint, in its classical form, with a patten under the opposite foot. More often nowadays we employ a calliper, so made that it is half an inch longer than the limb, and the heel of the patient's foot does not touch the heel of his boot. Special care has to be taken, however, in fitting such a splint, lest the counter-pressure be exerted upon the perinæum instead of upon the ischial tuberosity; pain, in that event, would be intolerable. It is essential that the patient should be literally sitting on the ring, and the latter must fit so well that it cannot slide up on to the perinæum.

In patients with a large flabby buttock, the ring will not be tolerated. In such cases, one has to fashion a blocked-leather buttock-piece, rather like the top of an artificial leg; the main bearing is still upon the ischial tuberosity, but the pressure is more or less distributed over the whole buttock.

A further degree of elaboration consists in the provision of joints at the knee, with ring-catches or automatic snap-locks to fasten the joint in full extension when walking, but allow of flexion when sitting down. This is convenient, but when the knee is flexed the extension disappears and allows of interosseous pressure, so that flexion should only be permitted if the joint is quiescent.

I show you photographs of the complete weight-relieving splint. (Fig. 5.) It is the most comfortable and the most efficient device at present known for the use of rheumatoid patients who are unwilling or unfit to undergo operation. It is capable of affording them a large measure of relief from pain, partly because it separates the inflamed surfaces, and partly because, in consequence of the reduction in interosseous pressure, the inflammation subsides in an appreciable degree. The range of movement of the damaged joint therefore undergoes improvement, in many cases. To get good results, the splint must be very accurately fitted; I always take the necessary plaster cast myself, and make the necessary modifications on the model, before the appliance-maker blocks the leather upon it. The length, also, must be carefully adjusted; the splint must always be slightly longer than the limb itself, to ensure adequate de-stressing. When a flexed knee or hip is being straightened, the length of the whole appliance has to be repeatedly adjusted, as the extension improves. In the most modern form the splint is not very unsightly, for the steels are close-fitted to the limb, and the boot

FIG. 4.

Appliance with spring-tractor to straighten a contracted leg. The second photograph shows the same patient after she had worn the appliance for one month.

FIG. 5.

Weight-relieving splint for arthritis of hip-joint, with rack-extension below knee, and elastic traction to correct flexion of knee joint (Ernst).

FIG. 6.

Rheumatoid hand, stiff but serviceable; patient desired no treatment for that reason.

FIG. 7.

Rheumatoid hands later, much improved by persistent manipulation.

covers them. The splint is applicable for the relief of mechanical stress in the hip or anywhere below it.

OPERATIVE PROCEDURES.

Let us pass on now to the consideration of operative procedures. Operations may be extra-articular or intra-articular, and as a general principle, the former are much to be preferred, unless the surgeon's intention is to replace a painful movable joint by one that is painless but fixed—i.e., to perform arthrodesis. There is a very great risk in rheumatoid cases of stimulating ankylosis by any form of intra-articular operation, and therefore such operations are only possible when the degree of infection is very mild, if mobility is to be retained.

(i) *Extra-articular Operations.*

Deformities can sometimes be corrected by gentle manipulation under anæsthesia. The method is specially suitable for the feet, and certain knee and hip cases; the feet do not ankylose for a very long time, but the utmost care must be taken to move them very gently into position, before plastering, and not to do anything approximating to wrenching them, or the disease will almost certainly be made very much worse. The knees most suitable for this method are those that show a puffy soft-part swelling; those that are dry and contracted are liable to have adherent vessels and nerves, and are better corrected by open operation. The knees being fully straightened, a plaster case must be applied upon an extension table, in accordance with the principle of pressure and counter-pressure; there must be a very thick wool pad and firm pressure upon the knee, whilst counter-support is exerted behind the ankle and thigh. To aid the straightening of the knee, a large window is cut at the back of the plaster. A splint of this kind is worn for three or four weeks, and can then be replaced by an anterior dished splint, worn continuously at first, and then, later on, as a night splint. An anterior splint is much better than the old-fashioned posterior one, for unless the back splint is firmly applied, it is quite possible for the [illegible] flex away from it, whereas with the "gladiator" splint, on the front, flexion is impossible; the splint can therefore be made of the lightest design (Fig. 8.) Flexion of the hips can be corrected by manipulation under anæsthesia, but as a rule other methods are preferable; if the flexion is slight, and the knees have needed plastering, the weight of the limb-plasters will pull the hips down; if the flexion is considerable, or if there is adduction as well, open myotomy, or myotomy plus capsulotomy, will be better than blind wrenching. Apart from the question of shock, and all other considerations, it must be remembered that death from rupture of the iliac vein has resulted more than once from wrenching a hip. One other point deserves mention in connexion with hips—viz., that the utmost care must be taken to avoid ankylosis, or the last state of the patient will be made worse than the first.

FIG. 8.

Result of straightening flexion of the knees by tendon-lengthening, and the hips by weight-extension, in the case of Miss F. C., who had been crippled and practically bed-ridden for 17 years, from an old dental streptococcal infection.

After all corrections of deformities, I prefer to put the limb in plaster; properly applied, it involves no risk of sores, and no other splint is so comfortable or so efficacious. Under certain circumstances, open tenotomies or myotomies are advisable. The indications are: (1) When it is desired to save time; (2) when long confinement to bed is undesirable; (3) as an alternative to manipulative correction, in delicate patients; (4) when capsulotomy is needed; (5) in cases of dry arthritis, where there is a likelihood of there being adhesions about the vessels and nerves; (6) in the case of the hips, when adduction or flexion is marked.

At the knee the operation is always performed with the aid of a tourniquet. The tendons can be divided transversely and left to sort themselves out afterwards (which they do remarkably well), but a better way is to lengthen each one as much as may be necessary, and suture it. At the hip complete correction is not often obtained until a deep dissection has been completed; when adduction is a feature, it will probably be necessary to divide all the adductor muscles at their origin, whilst with marked flexion it will probably be necessary to sever the two heads of the rectus femoris, as well as the more superficial muscles and the fascia. Subcutaneous myotomy is, in my opinion, obsolete; either one goes to work nervously, and does the operation inadequately, or else one goes at it vigorously and cuts some important structure.

When flexion has existed for a considerable time, and especially when the arthritis is of the dry form, the capsule will be contracted and will need division; and as one has the popliteal space laid open, it is obviously an advantage to lengthen the tendons at the same time in preference to stretching them forcibly. We have seen that it is almost hopeless to try to stretch a contracted capsule fully and permanently, and also that such attempts are risky; it is far better to cut it cleanly across. Moreover, it is precisely in cases where capsulotomy is indicated that there is a likelihood of the vessels and nerves being bound down and requiring to be freed if dangerous stretching is to be avoided. If the muscles were the only resisting structures, we should not often operate; it is the capsule that defies us, though we may take the opportunity to lengthen the muscles at the same time. Capsulotomy is a good operation, not as well known as it should be, and specially applicable to the hip, knee, elbow, and ankle. In dealing with the knee the patient is turned into the prone position; a long median incision is made and the nerves are defined and retracted; the muscle-bellies are either divided or held aside; the vessels are held first to one side and then to the other, whilst the ligament of Winslow is divided by one clean cut, passing right across the back of the joint and avoiding the articular arteries, which can always be easily seen. At the hip a capsulotomy, added to well-chosen myotomies, will enable any flexional deformity to be overcome, however severe.

(ii) *Intra-articular Operations.*

Turning now to intra-articular operations, one of the simplest is puncture of the joint, with or without lavage. If a joint is distended, it must always be emptied, or else serious permanent disablement will ensue from stretching of the capsule and intra-articular ligaments. That is an important general principle in joint disease. In very mild cases of rheumatoid arthritis, when no bony changes are to be seen in the radiograms, but the joint is distended, hot, and somewhat painful, much good can sometimes be done by first emptying the joint and then washing it out through a second cannula. Cases must be carefully chosen, of course, but provided that perfect asepsis is assured, no harm can come of the procedure, and sometimes it does great good. We believe nowadays that germs themselves are often living in these joints, so that the method is quite rational; if we thought that the disease was occasioned by toxins only, the organisms being elsewhere, it would be less defensible. In cases in which joint-infection appears to be quite recent, it is probably possible to cut it short by washing away most of the infecting organisms, leaving the joint-exudate to deal with the few that remain. The

method is new, and I mention it only in order to ask for help in working out its indications, its field of usefulness, and its limitations.

The less done inside a rheumatoid joint, if mobility is to be preserved, the better; nevertheless, there are instances in which arthrotomy is valuable—for example, if a knee is backwardly luxated (Fig. 9), and extra-articular procedures will not allow the deformity to be overcome, it will be necessary to open the joint and cautiously to divide the resisting crucial ligament. A good exposure of the interior of the joint is essential: the best way is to divide the patella vertically, after making a long anterior skin incision, passing to one side of the patella; this is a far better method than making an inadequate lateral incision, and having to drag the joint capsule and synovial membrane forcibly aside. If everything is handled very gently, and the synovial membrane is not touched more than is absolutely unavoidable, the reaction will be mild. The patella is drawn together by a single mattress-suture of catgut above it and one below it; in three weeks' time it will be impossible to detect in a radiogram that it has ever been split.

FIG. 9.

A knee which has undergone backward luxation, requiring division of the inter-articular crucial ligament for its correction.

Arthroplasty.—Of arthroplasty, in the case of the larger joints, I have had little experience, and such as I have had (in this condition) has been discouraging. It has been enough, however, to teach me the importance of not attempting this operation if there is the least risk of any active infection remaining; arthroplasty could only be indicated where one was dealing solely with the mechanical results of the disease, and all active infection was spent. It is, of course, very difficult to know when that state of affairs has come to pass; any attempt at arthroplasty while infection is still lurking will infallibly result in bony ankylosis. I have seen it more than once when I have unwittingly operated on a case of hallux rigidus in the phase of active infection, but I have never experienced it in the case of the larger joints, because I have never risked it.

Excision, with the object of securing a movable joint, is sometimes indicated. For instance, when the metacarpo-phalangeal joints have become disorganised and ankylosed in the extended position this operation will give a moderate amount of mobility; power will not be great, but may be enough for the purposes of an invalid. The main field of usefulness of the operation is in the hip. It must only be performed, of course, in old cases, where the pain is due to the rubbing together of two roughened surfaces, and in such instances it is capable of affording a large measure of relief. The result of the operation may be fairly stated by saying that one gives freedom from pain at the expense of a certain amount of loss of stability. However, the patient is generally well pleased to purchase relief of pain at that price; he has reached a stage when he does not desire to walk about very much, and the slight instability does not hamper him nearly as much as his pain formerly did. In order that movement may be free and painless, one must follow out the golden rule that was laid down by that master of joint excision, Sir Henry Howse; he said that one must always take away plenty of bone, and make a good wide space between the bone-ends. Lack of movement after a joint has been excised is nearly always due to inadequate removal of bone. In the case of the hip it is better not to remove the whole head, according to the classical technique; such a course makes the false joint decidedly unstable. It is better to enlarge the acetabulum somewhat, and to pare down the head of the femur all round after sawing off the top; this gives a good gap between the bones, and preserves the length of the neck of the femur and the stability of the joint fairly well. The anterior incision of Ollier gives a bad exposure. A very free anterior or antero-external skin incision is to be preferred, the muscles being then separated or else peeled off the ilium. The capsule must be freely opened and accurately sutured afterwards. A drainage-tube should be used for 24 hours, going down to the muscles, to prevent hæmatoma and all the troubles that might result from infection. The limb is put up in a Thomas' knee-splint immediately after the operation, with fixed traction. I find it unnecessary to use continuous active weight-extension, and that is a great advantage, for the Thomas' splint makes the patient self-contained and able to be got out of bed early. It is a great mistake to let these people stay in bed for any length of time; they become demoralised, and it is then very difficult to get them to bestir themselves and try to walk. A calliper or other simple weight-relieving splint should be used when first they begin to walk.

FIG. 10.

Advanced rheumatoid arthritis of the knee, with ulceration of all cartilages, necessitating excision.

Production of Ankylosis.—Excision with the object of producing a bony ankylosis (arthrodesis) is also a valuable operation. It is chiefly used in the case of the knee. The main indications are: (1) Cases where the articular surfaces are damaged beyond the possibility of repair and especially where bone is exposed; (2) cases of ankylosis in flexion; (3) cases where there is pain from interosseous pressure between damaged surfaces and yet the patient will not wear or cannot afford a de-stressing splint; (4) cases in which the patient desires a rapid and permanent cure of his pain, even at the expense of a stiff knee; (5) cases in which there is movement at the knee or ankle, not enough to be useful, and at the same time a source of pain, and yet the patient will not submit to instrumental treatment.

The last is a very large class. There are many people, for instance, whose knees move only between about 10 and 45 degrees, and in whom this movement is painful. If the articular surfaces are good, one would be content to straighten the knees by one or other of the methods which I have discussed, and hope by rest and other measures to get rid of the pain and restore a useful amount of function. If, on the other

hand, the articular surfaces are bad, and it is apparent that movement will always be painful, then it is far better to do away with the joint if the patient refuses instrumental fixation and de-stressing. (Fig. 10.) For very many hospital patients with disorganised and deformed knees arthrodesis is by far the best method of treatment. Many private patients, too, prefer a stiff but painless knee to one that moves slightly but painfully; they very often select the operation in preference to more conservative treatment because it means less expenditure of time and money and less enduring of pain. Properly carried out, the operation involves little shock, and if a tourniquet is used it can be completed in less than 20 minutes.

A long curved anterior skin incision should be used, passing to one side of the patella; it gives much better access than the classical U-shaped one, and is capable of enlargement at will. The capsule is freely opened and the patella turned aside. The rest of the operation proceeds along classical lines. The dressings are applied before the tourniquet is removed, and no ligatures are used. The limb is put up in a temporary splint composed of rolls of sterile wool, strengthened by thin slips of wood placed at intervals of about 1 in. all the way round the limb and bandaged firmly. This holds the parts quite firmly and conveniently; at the end of three or four weeks an anæsthetic is given, the position finally adjusted, and a light plaster put on.

CONCLUSION.

That ends what I have to say about the orthopædic aspects of rheumatoid arthritis. I hope I have been able to satisfy you that there is really a great deal that can be done for a large number of those who suffer from this disease. To eradicate the cause of the complaint is always difficult and often impossible, but there are hundreds of patients scattered all over the country whose deformities can perfectly well be cured, and the main object of this lecture has been to point out this fact, and to show how the various deformities can best be remedied.

The Application OF MODERN METHODS IN THE TREATMENT OF THE PSYCHOSES.

An Address delivered before the Section of Psychiatry of the Royal Society of Medicine, Jan. 10th, 1922,

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IN recent years an immense amount of attention has been given to what are termed the "psycho-neuroses," but little has been said or written about the psychoses—why, it is difficult to say. A distinction between the two conditions may be useful from the purely clinical or descriptive point of view, but there can be no scientific basis for it. In a paper on this subject read by Prof. Janet in New York last year it was suggested that perhaps a patient suffering from a psychosis might give more trouble to the police than the psycho-neurotic; but Prof. Janet was careful to point out that the word "lunatic" was a word in the vocabulary of the police—it does not exist, nor should it be employed, as a medical term. He mentioned that in a real psychosis—a real melancholia, for instance—we might find a most inoffensive patient, whereas amongst the acute, obsessed, impulsive patients belonging to the class of psycho-neurotics there might be found a most dangerous individual.

THE BEGINNINGS OF THE PSYCHOSES.

Speaking of the organic basis of a psychosis we must consider that illness at the earliest moment of its appearance, and not draw conclusions from examinations made a number of years after the illness commenced. At that late stage evidence of definite changes will no doubt exist in the central nervous system. In the series of articles written by Alzheimer on the psychoses and the morbid appearances found in them we discover thickened membranes of the brain, degenerated vessels, œdema, proliferated neuroglia cells, atrophied nerve cells, and fibres, but little which could be considered characteristic of one class of case as distinct from another. Then from the point of recoverability there is no distinction at all. Illnesses of either class are recoverable if treatment be provided in the early stages; illnesses of both classes may be difficult to overcome if the treatment be too long delayed.

Definition of Functional Mental Illness.

By functional mental illness, as I have attempted to show elsewhere,[1] we mean some disturbance of the ordinary mental activities, the activities of perceiving, thinking, feeling, judging, and acting, of giving attention and assessing values. These processes represent the fundamentals of mental activity, and it is in some disturbance of them that we find the basis of all functional mental illnesses, whether psychoses or psycho-neuroses. It is most important to remember that any disturbance of these processes is appreciated by the patient long before it becomes obvious to those around him. In a case who, when admitted into an asylum was suffering from acute hallucinations, it was discovered on investigation that the hallucinations had existed for more than a year. At first they were noticed when he retired to bed; they delayed his sleep, but did not disturb him to any appreciable extent. They gradually invaded the night, but no one knew of what was passing within him, and he was still able to carry on his work; not until this condition had existed for a year did the hallucinations begin to occur during the day, and then his altered behaviour was noticed in the home and in the workshop and he was taken to the asylum. This man had recognised that his mental activities were disturbed, and that when the disturbance occurred during the hours when it was necessary to adapt himself to his general surroundings he failed and he was conscious of the failure.

It is just some alteration of these fundamental processes which occurs in all varieties of mental illness, and in our dealing with patients we shall be able to get into closer contact with them and to understand their condition if we approach them from this point of view. Perhaps I may give two quotations which express this idea very clearly. About a century ago Mr. Eddy, a member of the New York Hospital Committee, said: "It is to be observed that in most cases of insanity, from whatever cause it may have arisen or to whatever extent it may have proceeded, the patient possesses small remains of ratiocination and self-command." Then, in 1848, Dr. Earle, who had charge of a mental hospital outside New York, said: "The primary object is to treat patients, so far as their condition will possibly permit, as if they were still in the enjoyment of the healthy exercise of their mental faculties."

Consider the cases we have come into contact with, in asylums or outside, who suffer from definite mental illness, whether a psycho-neurosis or a psychosis; we shall remember we have often been surprised to see their mental mechanisms working so well—they have taken an interest in their surroundings, they have read books intelligently and could discuss them, they could appreciate music and the arts. Encountering a typical case of paranoia, we may sometimes have felt that it hung in the balance as to which was mad, the doctor or the patient! The latter's reasoning has been so correct, he has been so alert, that the detection of any disability has been a very difficult matter; we could not feel certain that the patient was suffering

[1] Functional Mental Illnesses, Morison Lect., 1920, by R. G. Rows.

from a disease which necessitated his seclusion. And yet we all know that a patient suffering from paranoia is the victim of one of the most dangerous psychoses.

DISCOVERY OF CAUSES.

Dr. Earle's suggestion that we must examine these patients as if they were still in the enjoyment of the healthy exercise of their mental faculties is a very important one. Is the behaviour of such patients rational, or is it irrational? Judging these people from the conventional point of view, we shall conclude that their behaviour is irrational and anti-social; but if we examine them from the biological point of view, we shall have much more difficulty in applying the word "irrational" to their behaviour. Laws and conventions are admittedly necessary when a large number of people live together as communities, but those laws are made for the protection of the aggregate, not for the benefit of those who offend. From the biological point of view, perhaps, these people are reacting to a definite stimulus, in the light of which much of their conduct is not irrational.

Among the patients whom we have examined in the last few years, that is to say, since the war began, a large number have been certifiable. Had they not had the opportunity of being in a hospital where bed and breakfast were guaranteed to them, and where they felt no responsibility for the maintenance of a home, a large number would have been certified, and would have found their way into asylums. These men would have been incapable of providing for their homes, or of adapting themselves to the surroundings of the external world. It has been interesting also to see how many types of disease which might be included under the term "psychoses" were illustrated amongst these patients I think we can say that most of the types were illustrated, even general paralysis. Many cases of true general paralysis were admitted, but in the hospital at Maghull there were also patients showing the physical signs and much of the mental attitude of the general paralytic. The Wassermann reaction, however, was negative, and the later recovery under psychic treatment showed that such an organic disease as general paralysis could be closely simulated by a functional mental illness.

Another interesting type of case was seen in those who at one time might well have been considered psycho-neurotic, and at another period of the illness were undoubtedly giving signs which would place them in the class of psychoses. One man, for instance, was for several days acutely depressed; he was unable to mix with the others, he had definite feelings of revenge, and a tendency to suicide; his memory was much impaired. During those days he could have been certified as coming under the category of psychoses. But at other times he would exhibit obsessions and impulses, such that he must pick up a match from the floor, or that he must approach a certain object with an odd number of steps, and on no account must he arrive at it after taking an even number of steps. There was restlessness, and occasionally a sudden feeling of uselessness in the legs would appear. He was easily fatigued, his sleep was disturbed. While in this state the combination of symptoms suggested that he should be classed amongst the psycho-neuroses. If that man had been in the outside world and had felt that his family depended on him, he would undoubtedly have broken down and would have been certified and sent to an asylum.

Uselessness of Symptoms for Understanding Cause.

Freud advises us to regard symptoms merely as directing-posts indicating lines of investigation. Investigation will show the cause of many of the symptoms. As a matter of fact, the symptoms which were observed in that man were of little practical value from the point of view of understanding the case. They would have made it possible to place him in a category, but from the point of view of understanding the case, they were of extraordinarily little value; symptoms rarely are of much value in this regard. We have now got beyond the stage when we are satisfied to observe merely a rise in temperature, cough, and loss of weight as symptoms indicating the possibility of phthisis; we do not pretend that we understand a case of phthisis merely because we observe those symptoms. By employing more advanced methods of investigation, we have discovered that phthisis is due to the growth of the tubercle bacillus in the lungs and we have discovered the channels by which the infection takes place and spreads. The symptoms in cases of mental disease are of no more value to us than are the symptoms in a case of phthisis. But if we follow Freud's advice and go back in the life-history of our patients, if we discover the causes which may have led to the mental disability we shall then begin to understand the cases from the biological and the psychological points of view.

For instance, the patient I referred to just now came to me one morning and asked for an interview. He said, "There is something that has just happened which will explain much of my case. I was outside the hospital, and I saw a motor-car with the number XK6312, and I think that has led me to understand a great deal of my case." He said, "I cannot be certain of the index letters, but I am absolutely certain the number was 6312." The importance of this lay in the fact that while his first wife and he were away on a holiday his wife broke down and had to be taken to an asylum; the car which brought the doctor who certified her bore the above number. The patient added, "I think I may say that it was the dread connected with my wife's breakdown and the dread connected with my own condition after that breakdown of my wife which troubled me. And now I have been suffering from an illness myself, as you have explained to me, and it is the dread of what it might mean which has been holding me back. Of that I feel certain." As has already been suggested, the symptoms which that man gave me were of scarcely any value at all from the point of view of understanding the case; it was not until we got back to the fundamental cause of that man's trouble, and also to other causes occurring since his wife became insane, that it became possible to understand what were the mental processes at work in him to produce his mental illness.

ILLUSTRATIVE CASES.

A series of cases will illustrate this point a little further. Some years ago I had under my care a woman, aged 70, who was extremely depressed. She once said to the nurse, "I often feel that I wish I had strength to kill you and everybody in the ward, and then to cut my own throat." I said to her one day, "You are worrying over some past experience." She replied, "Yes, doctor, I am." That experience was an induced abortion 40 years before. This patient had had a considerable physical illness which had reduced her powers of resistance, and towards the end of the physical illness the memory of the abortion began to weigh upon her; she referred to it as "destroying the poor little thing," indicating the size of the fœtus. Having talked it out, and with further help, she recovered.

Another case. On visiting a ward on one occasion I discovered that a patient had had a terrible outbreak, had attacked those around him, broken the furniture, and finally had been placed in the padded room. On entering the padded room, I found him lying in the crucifixion attitude. I said, "We shall have to remove you to another building." He said, "Yes, doctor, I will come." We were walking over to the main building when he said, "Do you know why I did that?" I said, "No, I should very much like to know." He said, "I heard them say they were going to kill me, and I thought I would get one in first." This statement demonstrated that the mind of the man in this acute maniacal state was fully occupied with a sense of danger, which was conveyed to him in the hallucinatory remark that they would kill him. It is interesting to find that after he had told me of the hallucination he began during the walk to the other building to make homosexual suggestions to me. Probably there was

some connexion between some previous homosexual behaviour and the idea that some people were going to kill him, and this idea led to his maniacal outbreak. But the evident fact is that the mind of that man during his maniacal outbreak was occupied by the fear that he was going to be attacked, and as his life was in danger he was determined to get his blow in first.

A Case of Dementia Præcox.

The next case was one of dementia præcox, who took me through a whole series of layers of conflicts. He came into the hospital at Liverpool weeping and wandering round in the restless melancholic state with which we are so familiar, and nothing would quieten him. On other occasions he exhibited various signs of dementia præcox. During the examination he revealed a number of conflicts. The first conflict was that he had eaten cigarettes with a view of committing suicide. Next, he had been told at the previous hospital that he had been "swinging the lead" and was informed that he ought to be shot. Next, he said he had been with a woman and he must support her child. Next, that he had been with a woman and had become infected, and his body was being eaten away as a result. There was then a considerable delay before any further advance was made. The next layer included the habit of homosexuality. Before we got to the final layer there was another long pause. Then, at one interview, there occurred a terrific emotional outburst; he flung himself about, saying, "Kill me, for God's sake, I am not worthy to live." He then referred to homosexuality in France and to his having been caught in the act. He stated that later they all went up into the trenches; he was a sniper. At this point he took up a tuning-fork which was on my desk and he laid it down to show me what he meant. He said, "There was the trench, here were the men; here is a tree, and there is a sniper in the tree." That sniper turned out to be himself, and from the tree he had shot the man in the trench who was going to give evidence against him. It was very interesting that he had let himself go in this emotional outburst because afterwards he put an end to any communicativeness which he had formerly shown, and as a defence mechanism he adopted the attitude of perseveration, which is so often thought to be an important symptom of a psychosis. Perseveration is probably an attempt on the part of the patient to keep inquisitive people at arm's length. This man adopted that attitude, repeating over and over again phrases such as "he hopes he may get better," "there is no reason why he should not get better," and "perhaps he will get better." But only occasionally after that emotional outburst in which he had disclosed his history could he be moved to talk. He had been a locomotive stoker at one time, and he would talk of the routes he had followed on the engine and the stations he passed en route; there was no evidence of dementia. This man did not recover. I suggest that the incidents he narrated were too big for him to integrate; he could not face them, and he remained a man suffering from a psychosis.

A Case with a Series of Delusions.

The next case was that of a woman, aged 30, who was extremely depressed. She came under my care because she was suffering from scabies some months after her admission. For days she lay in bed curled up into as small a compass as possible with flexion of all her limbs; she resisted any attempt at examination of the scabies, and did not at first coöperate in any way. In the first interview, which lasted an hour, there was no word from her, except "How can I speak in a place like this?"—that phrase was repeated for practically the whole hour. At the second interview, a day or two later, most of the hour was occupied by the repetition of the same phrase, but I got her to tell me a little about the family of her brother-in-law in which she had lived. At the third interview she began to speak a little, and we were able to make some advance. She told me she adopted the perseveration "How can I speak in a place like this?" because she was afraid of what might happen if she said more. At last she told me her history, which was of a sexual indiscretion, from which at first she feared complications, but they were not realised. Then later there was an attempt, from midnight to 4 A.M., at cutting her throat. She described her obtaining the razor and her attempts to use it, but she only managed to make one or two snicks. In this case again there was perseveration, which, when she became more clear, she admitted to be a means of keeping an inquisitive person at arm's length.

In her case there is an interesting description of the development of a series of delusions. She was admitted to the hospital one afternoon, and in the ward to which she was taken she saw someone on the other side of the room with short hair. It was that of a woman whose hair had been cut short for hygienic reasons. In her disordered state and with the memory of her sexual indiscretion she concluded this was a place where men and women were allowed to sleep together, or in the same room, and she refused to endure such a thing, and would not remain in bed there. She was therefore put into a single room, in which the window was shuttered; high up there was a small aperture for ventilation; there was no bedstead. The only place like it which suggested itself to her mind was a horse-box in a training stable. She heard heavy footsteps outside and concluded that the grooms had returned and that when their work was finished they would come to her to have their pleasure of her. Consequently she became very frightened, tried to hide in a corner of the room and covered herself with whatever clothes were at hand.

In such cases the delusion may arise in response to some suggestion, dream, or hallucination, or it may be adopted as a means of getting away from an oppressive memory. Or finding themselves in a condition they do not understand, mental processes never having been explained to them, the patients may accept as an explanation the idea that their minds are influenced by some outside agency, it may be a supernatural power, it may be mesmerism, it may be some particular invention.

Einstein Theory as a Perseveration.

It has been interesting recently to have met a case in which Einstein's theory was invoked as an explanation of a mental illness. One patient, when asked what he complained of, commenced to talk of the Einstein theory. After about ten minutes he finished by saying he had discussed the theory with someone who had a much better physique than his own, and he supposed his physique would require to be improved in order that consideration of the theory should not be too great a strain for him. He asked me what I thought of such an explanation of his illness. I replied "I know one who does not believe it." "Who is that?" "Yourself." I have not heard more of Einstein since. It was not a perseveration of the same phrase in this case, it was a psychic fancy on his part to keep him far away from the real cause of the mental disability, which soon came out when once he had got rid of the Einstein theory.

Operation of Law of Contrast.

It is found also that in the development of the delusion we have the law of contrast operating; the patient to superficial observation may assume an attitude of mind which is the exact antithesis of his real mental content. That brings us to the next case—that of a man who had been ten years in an asylum suffering from chronic mania. He was not in my section; I saw him when doing the round for a colleague. I said to him "George, what is that memory you cannot forget, but which has been disturbing you for so many years?" His reply was a volume of abuse. I repeated the question several times. George was a man who, whenever spoken to, claimed that the asylum and all the estates were his, and that we were thieves and usurpers who kept him there so that we might enjoy his property. I completed my visit to the section and was preparing to leave, when I heard a quiet voice over my shoulder saying, "Who told you

about that?" There was no cursing and no claim to be set at liberty. This man had written sheaves of letters and had talked interminably in a strain entirely opposed to that shown in the quiet question, "Who told you about that?" His ideas and his repetitions were a means of enabling him to get away from some troublesome memory and it required only a slight stimulus to produce a reaction which made it obvious that he was aware that he was running away from the real central cause. That patients do understand the absurdity of their ramblings is demonstrated by a remark made by a woman, who said, "I can conceive of nothing more mad than the stuff I often say and write to you."

DISTURBING MEMORIES AND THEIR EMOTIONS.

In other types of illness also we see the importance of disturbing memories and their emotions. By making an analysis even of the wildest delirium, it is possible frequently to find the origin in some experiences in the patient's past life. You will remember Jung's case of the man who had hare-lip, club-foot, and cleft palate, so much which could make him not a man, but he was a clever archæologist. He had two maniacal outbreaks, and they discovered in the first instance that, in spite of his cleft palate and so on, he was an orator and an operatic singer; in the second attack he was a Hercules and attempted to throw the orderlies about, break down the doors, and show generally what marvellous muscular power he possessed.

A very interesting case came under my care some time ago; there had been an acute psychic breakdown, and the patient had been transferred to an asylum in a state of wild delirium. Part of her delirium was that a black bird had come and touched her left wrist, and that she had lost all her vitality. That was a definite delusion, and it was most interesting to work it out. When she was 15 years of age she went to Germany and there met a young officer, whom she did not like. When 20 years of age she, with a cousin, went to Germany on the way to Russia, and met the officer again. While they were staying a few days in a village, he called on them. That afternoon the cousin had a sick headache, and the patient had to entertain the officer herself. Her cousin suggested she should take him for a walk. She did so. When they got beyond the village he seized her left wrist and tried to kiss her. She broke away from him and rushed back to the village. Having gained that history, it was not difficult to trace the origin of the idea of her left wrist being touched by a black bird; the German national emblem was a black eagle. A number of other constituents of her delirium were unravelled in a similar way, and they ceased to influence her after the mental mechanisms concerned had been explained to her.

Normality of Emotions in these Cases.

We see, therefore, that even in the case of a wild delirium, it is possible to discover what in the experience of the patient have been the causes of the condition. In all these cases, I want to point out, the emotion evinced was perfectly normal. For the old woman to have had remorse after having, as she thought, killed the infant was a perfectly normal emotion. In the epileptic, fear was a normal emotion in response to the hallucination. In the dementia præcox case, fear and remorse were normal responses to the events discovered on examination. In the woman aged 30 there were shame and fear. They were normal emotional reactions to the stimuli which gave rise to the mental disturbance. I venture to say that, looked at from the biological point of view, the condition of these patients was not entirely irrational; it may have been excessive, but I do not think the word "irrational" is one which we ought to apply to it.

We must also recognise in these psychoses and also in the psycho-neuroses that when patients begin to find that the ordinary mental mechanisms are failing them, that they cannot think, feel, act, judge, or give attention in the usual way, then a dread arises. This constitutes a new factor, one not connected necessarily with the experience which has given rise to the disability, but a dread of what this may lead to.

Rise of a Dominant Emotional Factor.

Now in the development of a mental illness we have also to recognise the narrowing of the mental field due to an emotional factor which may dominate much of the patient's mental activity. In the same way that mental tendencies in ordinary life are so much determined by the emotional states, so we find in the psychoses and the psycho-neuroses the mental life is determined largely by the dominating emotional state. The existence of such a ruling emotion will naturally tend towards the revival in memory of other previous experiences coloured by a similar feeling. Such revival of memories will occur, as a rule, not spontaneously but in response to stimuli from without or within. These stimuli may be extremely subtle in their action, and may not be appreciated by the patient. Even if he is conscious of a given stimulus, he may be unable to recognise the relation of cause and effect between it and the mental reaction. It is often of great assistance to a patient if the stimulus which has led to a special result can be traced and if the mechanisms concerned are explained to them.

An example will make this more clear. A man one day complained to me that he was very much worse. He said, "I had the worst nightmare I ever had in my life last Saturday night." Knowing his case I asked him, "What happened on Saturday to lead your mind to snakes?" He said, "I do not know that there was anything; I had a very good day on Saturday, and I was very disappointed to have an acute nightmare in the middle of the night, which has thrown me back very much." We continued talking for several minutes, and then he said, "I think I can explain that now, Sir." "Last Saturday evening I spent with an old friend who has been in India; he was in the army there as a sergeant, and for two or three hours he was recounting his experiences in India. I remember that in course of conversation he mentioned that when they had to prepare a bivouac they always searched among the grass and under stones to see if there was a snake there." That little incident was sufficient to stimulate his memory mechanism, and he had the worst nightmare of his life between 2 and 3 o'clock in the following morning. He was at once relieved by explaining to him the relation between the stimulus and the reaction, and showing him that it all depended on the memory of an experience which had occurred 20 years previously. So also we find that a particular situation, something read or seen, a sound of music, the tone of voice in which a remark is made, a gong being sounded, a tin-can being beaten, a photograph, a colour, anything which by association can recall a past incident, may suffice to set going a memory in the patient, and he may fall into a state of terror or other emotion, similar to that experienced at the time of the original incident.

APPRECIATION AND REACTION.

So far I have given you only one side of the picture, the psychic side. But it is impossible to understand a mental illness by considering the psychic side alone. From every experience which crosses the threshold of consciousness we have three results. One is the intellectual appreciation of the fact that something has happened, the second is the emotional reaction, and the third is the physical reaction. In the physical reaction all the organs of the body may be involved. And there is here probably a source of disturbance which in many instances may give rise to great anxiety in our patients. We know that acute fear has associated with it a disturbance of practically every organ of the body; eyes, facial muscles, heart, lungs, stomach, muscles generally, mucous membranes and skin, and perhaps the bladder and rectum may be affected. All other emotional states have associated with them a different series of organic reactions. It is probable that many of the symptoms of organic disturbance complained of by our patients are simply the physical changes connected with the somatic expression of the emotions. They do not indicate

definite physical disease, but they may be the source of a dread of physical disease. To quote one case by way of illustration. There occurred in one patient a disturbance of the pupil, a thickened, œdematous state of the skin of face and neck, blue extremities, such as you find so frequently in dementia præcox; a sweating condition; an excessive salivation, which led to an almost constant dribbling; incontinence of urine and constipation. These formed a series of physical reactions which were all of them connected with the disturbed action of the sympathetic and autonomic systems, and all were appreciated by the patient. They disappeared after a psychological investigation and explanation which enabled the patient to understand the relation of cause and effect, and to realise that the conditions were the accompaniments of emotional states and need not be regarded as evidences of organic disease.

There are also disturbances of the endocrine glands to be considered. Of these we as yet know very little, but perhaps we may regard it as established that they do play a part. We know, for instance, that a disturbed function of some of the endocrine glands may lead to an alteration of the sensitivity and reactivity of the central nervous system, so that a slight stimulus, which would not cause much result apart from this glandular disturbance, in its presence may give rise to a definite reaction or an over-reaction. We have also to consider the effects of fatigue, illness, intoxication, and shocks to the organism. Assuming that the form of the mental disease is determined by the mental content, memories, experiences, and the emotions which accompany them, the control which normally enables us to keep these reactions within limits may be weakened by the fatigue, or the illness, or the intoxication as the case may be. It is difficult to see what further influence these can have. That an intoxication can by itself produce a mental illness is impossible; there is no case of such illness which is produced by one cause alone.

CONCLUSION.

If we are to understand mental illnesses we shall have to consider not psychology alone, nor psychology combined with a knowledge of the nervous system. A study of the physiology of the human organism must be included, and also whatever of the allied sciences of biology and anthropology can assist in throwing light on the origin and characters of the psychoses and the psycho-neuroses.

ENCEPHALITIS LETHARGICA:

SOME CLINICAL OBSERVATIONS ON THIRTY CASES.

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IN October, 1918, I reported to the Royal Society of Medicine a series of 16 cases of encephalitis lethargica, all of which had more or less completely recovered. These included the original cases recorded in THE LANCET in April, 1918.* Since then I have had 30 more cases under my care, but the mortality has not remained at zero, 11 patients having died. The percentage mortality of the whole series is therefore just under 24. This coincides almost exactly with the average of some statistics taken at random from various sources both in this country and elsewhere, thus:—

	Cases.	Deaths.
MacNalty [1]	168	37
Bramwell [2]	57	9
Denechan and Blanc [3]	31	11
Bauer and Mayer [4] ..	29	5
McClure [5]	32	17
Total	317	79 (or 24%)

Economo estimates the mortality at about 40 per cent., and Netter states that, apart from the abortive and ambulant cases, about one-third of the patients succumb.[6] Probably, in all these lists, the numbers are too high, as the milder cases often escape the observation of those who record statistics.

The 30 cases are placed in three groups according to their severity:—

Group 1.—Five Mild or Abortive Cases.

Only one of them (Case 43) showed anything unusual—namely, the occurrence of myoclonic contractions limited to the abdominal muscles and simulating an "acute abdomen." Lethargy and cranial or other palsies were absent throughout.

CASE 43.—Vague ill-health; sudden acute abdominal pain; slight pyrexia; insomnia; recurring spasm of abdominal muscles; recovery. F., aged 31, seen Sept. 20th, 1920; feeling out of sorts for a week or two; awakened on that day by severe pain in abdomen, which kept recurring in cramp-like attacks; she was obliged to go to bed. An "acute abdomen" was at first suspected. Slight pyrexia. I saw her during several attacks of pain and it was obviously due to cramp-like spasms of the abdominal muscles. They continued with less severity and at wider intervals for three or four days, and then subsided. Temperature returned to normal on the 24th, and she gradually recovered.

* THE LANCET, 1918, i., 568.

Group 2.—Fourteen Cases of Medium Severity.

(*a*) *Four Cases with Complete Early Recovery.*—These presented no unusual symptoms, excepting a boy, aged 12 years (Case 24), who, on the nineteenth day, when convalescence had set in, suddenly had a series of left-sided epileptic convulsions with loss of consciousness and temperature up to 105° F. They recurred during about five hours, after which he was quite well. He had never had any fits before.

(*b*) *Ten Cases with Retarded or Incomplete Recovery.*—The after-effects were various, mental deterioration, the Parkinsonian complex in varying severity, paraplegia, muscular jerkings, &c.

Case 21, a middle-aged man, had to be sent to an asylum for a time. He recovered quickly and completely and is now back at his work as manager of a large business. Case 28, also a middle-aged man, began with pulmonary tuberculosis a few months after his attack. Case 34, a girl, aged 21, was very difficult to manage for many months, being violent and quarrelsome, but eventually improved. Two younger girls (Cases 20 and 35) seem permanently damaged in mentality. One of the cases with the Parkinsonian syndrome (Case 44), a man, aged 39, shows extreme festination, and especially retropulsion. He is an exceptionally powerful man and the combination of this with the plastic tone of paralysis agitans forms a very striking clinical picture. In a young married woman, aged 26 (Case 30), the plastic tone is limited to the right arm and leg. The contrast between the posture of the right and left hand when at rest is characteristic. It is also well shown by getting her to approximate the tips of the fingers and thumb tightly in each hand, and at a signal to extend the fingers and thumb of each hand as quickly and as forcibly as possible. Those of the left hand shoot out to the full extent immediately, whilst in the right hand the movement lags behind and cannot be completed to its full extent. With this she has a typical mask face. Case 32 showed the neuritis type; there was complete flaccid paralysis of both legs, which occurred five weeks after the initial lethargy and cranial nerve palsies. The paraplegia did not disappear for six to eight months.

Group 3.—Eleven Fatal Cases.

One of these (Case 17) died from epidemic influenza six months after his attack of encephalitis. He was the patient referred to in McNalty's report (loc. cit.) as an instance of prodromal vertigo.

CASE 17.—M., aged 23, admitted May 21st, 1918, complaining of dizziness; a few days later it became much worse, accompanied by diplopia, dysphagia, and regurgitation of food through the nose. Lethargy then set in and persisted for some time. Ophthalmoplegias, right facial palsy, hypoglossal paralysis, and aphonia appeared at various times. Wassermann reaction negative (blood and cerebro-spinal fluid). Lumbar puncture, pressure slightly increased; fluid clear; no growth. Eventually he was left with a well-marked paralysis of the right sixth and seventh nerves, marked hemiataxia, loss of posture sense of right arm and leg so that he could not walk alone, and delayed and diminished sensibility of left arm, trunk, and leg, but not of the face.

He remained in hospital during the next six months, and his condition showed no change. In November, 1918, he became infected with an acute attack of epidemic influenza, which was then at its height, and died three days later. At autopsy a typical influenzal pneumonia was found. The brain was examined by Dr. J. G. Greenfield who found "an area of softening in the right inferior peduncle of the cerebellum and the neighbouring part of the floor of the fourth ventricle. Above and below this there are some vessels which show excess of cells in their walls, but only such as would indicate the reparative processes which are going on."

In the remainder of the cases death was, so far as one can tell, due directly to the disease. In several of them circumstances did not permit of autopsy. One man (Case 25) began with double parotitis simulating mumps. Two of the cases (37 and 39) occurred within a few weeks of each other, and presented many features in common. Both were big muscular men, who appeared to be in robust health at the onset of illness; both had been walking about up to the time of admission to hospital, and the attacks did not then seem likely to prove very severe. Both got steadily worse day by day, with rising temperature and pulse, and died without any fresh development. In one of these old foci of tubercle at both apices showed recent activity. These cases will be referred to later. In both, typical changes in the central nervous system were found after death. Case 26 is the only one I have seen of the severe myoclonic type. As will be noted from the history, she was admitted in December, 1916, six months before Boveri's account of this type was published. At the time I did not recognise its nature. No autopsy was allowed.

CASE 26.—Severe pain over left side of head; violent clonic spasms of neck and later of arm muscles; delirium; death. A married woman, aged 35, was nursing her son who was ill with scarlatinal nephritis. I saw her on Dec. 16th, 1919. She had been quite well until three days before, when severe pain began behind the left ear and over the left forehead. Next day it reached the back of the neck, and was accompanied by violent painful clonic contractions of the neck muscles. They persisted for two days. The pain then reached the arms and thighs. Insomnia. She was admitted into the Royal Hospital on Dec. 17th, and was then dazed and confused but responded to questions. Temperature raised; no Kernig. On the 18th she was drowsy, restless at times, and trying to get out of bed. Lumbar puncture; increase of pressure; fluid clear. Speech was explosive like an insular sclerosis. She became violently delirious and the temperature rose irregularly to 106° F. just before death on Dec. 20th. Fundi not examined.

The lumbar pressure was increased considerably, as it was in Carnac's [7] case and slightly so in Phillips's,[8] and in the second of Boveri's [9] cases.

Table Showing Duration of Fatal Cases.

No.	Sex	Age	Date of—			Duration of disease—	
			Onset of ill-health	Definite symptoms	Death	Onset	Definite symptoms
25	M.	45	1 or 2 w. before	Oct. 11/19	Oct. 24	3rd or 4th w.	14th d.
37	M.	30	2 w. before	Oct. 6/20	Oct. 17	4th w.	12th d.
39	M.	36	Dec. 1/20	Dec. 1/20	Dec. 20	21st d.	21st d.
26	F.	35	Dec. 13/19	Dec. 13/19	Dec. 20	8th d.	8th d.
33	F.	1½	Some d. before	Aug. 7/20	Aug. 28	? 4th w.	21st d.
41	F.	3	About 1 w. before	Jan. 25/21	Feb. 14	? 4th w.	21st d.
35	M.	5	About 1 w. before	Sep. 23/20	Oct. 8	3rd w.	15th d.
31	F.	41	Jan. 21/21	Jan. 21/21	Jan. 28	8th d.	8th d.
42	M.	60	Apr. 10/20	Apr. 10/20	Apr. 23	14th d.	14th d.
45	F.	31	May 11/21	May 11/21	June 25	46th d.	46th d.

w. = weeks; d. = days.

Three cases in infants (33, 35, and 41) presented many features in common, simulating, more or less, cases of meningitis. In two there was hemiplegia. No autopsy was allowed in any of them. One of them (Case 33, aged 2 years) lived in a small isolated village where no other case occurred before or since. The child had not been outside the village at any time.

The table shows the duration of fatal cases.

Treatment.

Is bed the best place for very lethargic cases with no other marked symptoms? It is the natural thing as soon as encephalitis lethargica is recognised to send the patient to bed. In some cases this may be necessary for other reasons—vertigo, hemiplegia, extreme asthenia, &c.—and then there is no choice; but in other cases the patient is quite capable of getting up, and indeed has often been doing so up to the time of being seen. This was so in two of the fatal cases recorded above (Nos. 37 and 39); they did not take to bed until coming into hospital. Would the course of the illness in these patients have been more favourable if they had been allowed to continue getting up, and, indeed, urged to do so? Such cases may continue to go about in spite of their extreme lethargy and may recover. Albruzzette [10] records a case in a man, aged 44, so lethargic that he fell into a profound sleep whilst talking to his doctor. His sleepiness was intense. Symptoms lasted 20 days and then cleared up. This patient never lay up during the whole period.

We may contrast this with my two cases or with another case reported elsewhere in 1920 in which lethargy was the chief symptom. This man was going about for the first seven days, and was then first seen by his doctor who, diagnosing the disease, insisted on him going to bed, which he did. He died ten days later without anything further of a definite kind developing. I realise that it is characteristic of many of these cases to begin insidiously; the patients therefore continue going about for the first part of their illness, whilst this is often impossible in the third or fourth week. The question I would raise is whether the possible harm which may arise from allowing a lethargic patient to be up each day is greater than the undoubted risk of putting an extremely lethargic person to bed, where he lies like a log hour after hour and day after day. As regards actual treatment, I have not found anything give beneficial results with sufficient constancy to call for notice.

Infectivity.

Nothing amongst these cases has indicated direct or indirect infection. It is interesting to note that epidemic influenza does not protect against encephalitis or vice versa. Case 17 died of influenza in November, 1918, six months after having encephalitis, whilst Case 22 had severe influenza during the epidemic in November, 1918, and a typical encephalitis lethargica in January, 1919.

After-History of Cases.

Nearly four years have elapsed since encephalitis lethargica was recognised as a distinct entity, and it is now possible to form some idea of the extent and frquency of permanent trouble which it leaves behind. I have given the after-results of the present 30 cases. In order to complete the series, I have also made inquiry about the 16 earlier cases recorded in the Proceedings of the Royal Society of Medicine, October 1918. Of these, only three had any symptoms left at that time. Their further history is as follows: Case 7 was an old lady of 70, still living in May, 1921; her medical man assures me that she has completely recovered and is as well as ever she was. Cases 4 and 16: Both showed polyneuritic symptoms with flaccid paraplegia, which was considerable in October, 1918—i.e., about six months after onset. Of these, Case 16 has made a good recovery. He is able to do general labouring work on the pit-top and can walk several miles without undue fatigue. Case 32 (vide supra) showed an equally good recovery after paraplegic symptoms of several months' duration. It is therefore rather surprising and disappointing to find that the third case of this type (Case 4 of the original series) has not recovered after three years. I think, however, that there is a possible explanation. I have not been able to see him since he left hospital in 1919; he writes that "he tried to walk about a little, but had to give it up as it used to give him such pain in his head and all up his back." He is in receipt of a pension.

Effect on Pre-existing Tuberculosis.

Case 37 died with a steadily rising temperature about the fourth week from his first symptoms. Previous to this illness he was on full duty as a police constable and had been in good health. At autopsy old foci of healed tubercle were found at the right and left apices with acute depositions of miliary tubercles for a small area around. This was not suspected during life, although I remember that he developed a troublesome cough whilst in hospital. He was one of the very lethargic cases with very few other signs. It seems probable that the renewed activity in the tuberculous foci had begun during his attack of encephalitis.

A similar awakening of old tuberculosis occurred in Case 28, who had a typical rather severe attack of encephalitis, from which he slowly recovered. Within a few weeks he had severe hæmoptysis and pulmonary symptoms followed rapidly. The third case, in which tuberculosis developed as a widespread disseminate lupus, is full of interest and will be recorded in full later. In this respect it is worth noting that most of the recorded cases of disseminate lupus have followed infection by measles; pulmonary tuberculosis is also a not uncommon sequela of this disease. Whether it is also a common sequela of encephalitis lethargica remains to be seen.

Prognosis.

I had hoped to conclude this paper with some general deductions on prognosis; but the more I consider the cases in detail the less do I feel that such generalisations are as yet possible. I agree with Bramwell [11] that a steadily progressive stupor with rising temperature and loss of sphincter control is ominous, though not necessarily fatal, but by the time that stage is reached the gravity of the case is obvious. In the early stages uncertainty as to the future of most cases is one of their most characteristic features. Even during the progress of the case it is often impossible to form an opinion as to the prospect of recovery. If one compares it with other acute specific infections it is apparent that signs upon which we can usually rely in them for prognosis are often not forthcoming in cases of encephalitis. Patients with comparatively mild attacks recover only to be seriously damaged for very long periods, even permanently. Others who have appeared in the early stages to be at death's door recover quickly and completely, whilst still others whose illness has seemed moderately severe for one or two weeks suddenly become worse and die without any obvious reason why they should.

The more cases one sees the more anxious does one feel as to the future of any case, however mild its onset or progress.

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DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL.—The annual meeting was held in the Liverpool Town Hall on March 3rd. Mr. W. H. Dulton, the chairman, stated that in the past year the number of out-patients had increased by 1000. New expenditure was contemplated next year in the renewal of the heating system and in the opening of a ward for diseases of women and for obstetrics. He appealed for a greater measure of support from the wage-earners of the city, who benefited chiefly from the work of the hospital. As chairman of the joint committee, appointed under Lord Cave's scheme for Liverpool, he felt that much might be done by combination and coöperation between the hospitals. If they would coöperate in several directions, such as in buying or seeking subscriptions, there could be little doubt that the community would greatly benefit. Mr. J. Wedderburn Wilson, the hon. treasurer, submitted his accounts, which showed an excess of expenditure over income of close on £3000. He mentioned that £2336 had been received from in-patients.

THE HYSTERICAL NATURE OF SO-CALLED PERNICIOUS VOMITING OF PREGNANCY.

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As vomiting occurs in more than 50 per cent. of women in the early weeks of pregnancy, it can be regarded as physiological. In about 1 case per 1000 in hospital patients, and rather more frequently in better-class practice, vomiting occurs after every meal and even apart from meals, and persists longer than the usual period of six or eight weeks. It is then referred to as "the pernicious vomiting of pregnancy." The classification of "pernicious vomiting" suggested in 1906 by Whitridge Williams has up till now been widely accepted. The first or reflex class consists of those cases in which some obvious organic condition is present, which could give rise to vomiting by reflex action, just as reflex vomiting may occur in appendicitis. Apart from this rare and comparatively easily recognised form, pernicious vomiting is regarded as either nervous or toxæmic. It is generally agreed that the only means of diagnosing between these two forms is by estimating the ammonia index of the urine, as this is regarded as a measure of the toxæmia present. The index represents the percentage of the nitrogen present in the urine as ammonia, and depends to a large extent, though not exclusively, on the quantity of acids produced as a result of disordered metabolism. The normal index varies between 3 and 5, but it is a little higher in pregnancy, the average being 5·9. According to Whitridge Williams, if it exceeds 10 per cent. a diagnosis of toxæmic vomiting can be made with certainty. If the ammonia index is not raised, the condition is supposed to be nervous; no other means of diagnosis are suggested, the symptoms being indistinguishable.

Usual Treatment of Nervous and Toxæmic Forms.

The nervous form of pernicious vomiting is described by Whitridge Williams as due to "some neurosis allied to hysteria"; the vomiting is treated by isolation, forced feeding, encouragement, and such drugs as bromide. If these measures fail, the diagnosis is altered, as it is then known that the ammonia coefficient will certainly rise sooner or later. Ever since the discussion in the Academy of Medicine of Paris in 1852, when Dubois advocated the artificial termination of pregnancy for the treatment of pernicious vomiting, because of one recovery in four cases in which this was done, whereas all of his ten other cases died, this has become the accepted treatment for the condition. The moment for emptying the uterus has generally been decided by the severity of the vomiting, the degree of emaciation, the dryness of the tongue, the condition of the pulse, and so on. Whitridge Williams, however, recognising that these symptoms did not help in diagnosing toxæmic from nervous vomiting, laid down the law that an increase of the ammonia coefficient to 10 per cent. "affords an urgent indication for the prompt termination of pregnancy," as death otherwise invariably occurs within a few days. When a laboratory is available, in which the necessary investigations of the urine can be made, this chemical indication for emptying the uterus is now generally adopted.

Argument for the Hysterical Origin.

For several years I have believed that pernicious vomiting of pregnancy is always hysterical.[1] Discussing the question with obstetricians, I have almost invariably been told that they recognised a nervous type, and that cases cured by psychotherapy must have been "nervous," as toxæmic cases would never respond to such treatment. I have now had a patient under my care in circumstances which for the first time made it possible to prove with certainty that the case was one which would generally be regarded as

of the toxæmic class. Clinically, the patient was a typical example of severe pernicious vomiting; she vomited constantly whether she took food or starved, her tongue was dry, her pulse as rapid as in any case of toxæmic vomiting I have seen reported, and she was very emaciated. Two days before I saw her the ammonia index was 28, nearly three times as high as the point which Whitridge Williams regards as the danger-signal. As in other cases it has been found to rise by about six points a day when once over 10 or 15; it was probably as much as 40 when I saw her, which is almost as high a figure as any recorded, and the urine contained a very large quantity of diacetic acid.

Yet relief followed half an hour's psychotherapy; the vomiting ceased, the pulse-rate fell, the ammonia index dropped to the normal for pregnant women, the diacetic acid disappeared from the urine, and the patient gained 16 lb. in weight in four weeks.

A Case of So-called Pernicious Vomiting of Pregnancy with High Ammonia-Coefficient cured by Psychotherapy.—G. B., aged 32, became pregnant about the middle of December, 1919. Three weeks later she began to vomit. In addition to being sick after meals she vomited large quantities of bitter yellowish-green fluid at all times of the day. She also complained of constant pain in the left side, which was not relieved by vomiting. As all treatment failed to help her, she was admitted into a provincial hospital, where her abdomen was explored, as it was thought she might have an extra-uterine gestation, but this was not the case and nothing was done. She continued to vomit as constantly as ever and felt much weaker on her return home. She was kept in bed, but as no improvement occurred, she was admitted into the obstetric ward at Guy's Hospital under Mr. Harold Chapple on March 7th, 1920.

A diagnosis of pernicious vomiting of pregnancy was made. Mr. J. H. Ryffel examined her urine on the day of admission, and found the ammonia index 28; there was a large amount of diacetic acid in the urine, but no albumin or sugar. From the clinical and chemical points of view respectively Mr. Chapple and Mr. Ryffel regarded the case as one which would hitherto have been diagnosed without hesitation as of toxæmic origin. I saw the patient on March 9th at 2 P.M. Her pulse, which had not fallen below 120 since admission, was now 136. She was very emaciated and her skin was dry and inelastic. Her tongue was furred and very dry. She had vomited everything, fluid as well as solid, given during the last week, and she continued to vomit even when receiving saline solution by rectum without anything by mouth.

Her mind was perfectly clear. She told me that as soon as she began to vomit early in pregnancy her father had said to her "You will have a bad time of it, as your mother vomited all the time she was carrying you." I explained to her that there was no real reason why she should have continued to vomit after the first six weeks of pregnancy, in which vomiting is so common as to be regarded as normal, but that what her father had said to her had suggested the idea that the vomiting would continue, and such a suggestion, coming at such a time, was all that was needed to lead to the condition she was now in. We talked about her illness for ten minutes, at the end of which I had succeeded in convincing her that she would not vomit again. I returned to her at 4 P.M. and watched her eat some buttered toast and tea which she had herself chosen for her first meal. She felt no inclination to vomit. She had a good supper, but vomited her breakfast next morning. She was then transferred to my ward, and had dinner with steak and pudding, which she kept down. Except for a slight tendency to vomit after breakfast a week later she had no further trouble, and left the hospital on April 8th having gained 16 lb. in weight.

The ammonia coefficient, which had been 28 on March 7th, had fallen to 11·7, 10, and 9·5 respectively on the 16th, 22nd, and 29th March, and there was no diacetic acid or other abnormality in the urine. The pregnancy ran a normal course, and a healthy daughter was born at full term.

About the middle of August, 1921, 11 months after the birth of her baby, she again became pregnant, greatly to her indignation, as she had declared on discharge from the hospital that she would never have another child if she could help it. She at once began to vomit, and the vomiting became so severe that her own doctor discussed the question of terminating the pregnancy artificially. On Oct. 18th she came to the hospital to see me. It seemed clear that the vomiting was again hysterical, and that this time it was caused by the semi-conscious desire to end an unwished-for pregnancy. Without difficulty I made her realise that the vomiting would cease as soon as she made up her mind that she had to face her troubles and go through with the pregnancy, and that vomiting would not be regarded as an excuse for ending it. She came into the hospital the next day, and did not vomit again, although she was at once given a full diet. She remained in hospital for a fortnight and was then discharged, having remained free from digestive symptoms the whole time. The patient is now (March 14th, 1922) nearing the end of the eighth month of pregnancy. She has been quite well, except for some slight indigestion with occasional sickness during the last three weeks.

It is obvious from this case that no reliance can in future be made either on the clinical or the chemical diagnosis of toxæmic vomiting of pregnancy. Personally, I do not believe that such a condition exists, apart from the vomiting associated with eclampsia and acute yellow atrophy. The high ammonia index and the great excess of diacetic acid present in my patient's urine were clearly not caused by toxæmia, but were the result of starvation and dehydration. The same symptoms and urinary changes do not occur in fasting, as water is drunk. But in pernicious vomiting so much water is lost that the acid products of forced metabolism cannot be excreted with sufficient rapidity, and ammonia is formed to neutralise them. Whitridge Williams recognised that there was no clinical distinction between his nervous and toxæmic cases. But the chemical evidence is only available in the latter for a few days, as the rise in the ammonia index is sudden and rapid; consequently, if such a case were seen just before the index began to rise, it would be called nervous and could be cured by appropriate measures, whilst if seen a few days later for the first time, when the index had risen, the case would be called toxæmic and the uterus would be emptied. Or if it were diagnosed as nervous and treatment failed, it would be said that the diagnosis must be wrong, and this would appear to be confirmed by the subsequent rise of the ammonia index and by the occurrence of death unless the uterus was emptied.

It is clear, therefore, that the division into the nervous and toxæmic classes is fallacious. All cases are nervous; but the word hysterical should be substituted for nervous, as the condition is typically hysterical, caused by suggestion and curable by psychotherapy. The physiological vomiting of the first weeks gives rise to the suggestion of continued vomiting, which can be instantaneously stopped by the best form of psychotherapy—explanation and persuasion, without recourse to suggestion by isolation, diet, and drugs, which can only act by suggestion. To empty the uterus must similarly act by suggestion, and when vomiting continues and death occurs in spite of the operation, as in four out of Whitridge Williams's nine cases, the suggestion has not proved sufficiently powerful, probably because the patient was not first made to believe with certainty that it would cure her.

The occurrence of hysterical vomiting in one pregnancy is very likely to suggest a recurrence in any subsequent pregnancy. This occurred in both of the cases investigated by Gilliatt and Kennaway.[2] In the case described above the suggestion was given by the patient's father.

A preliminary note[4] on my views concerning so-called pernicious vomiting of pregnancy met with a certain amount of criticism, on theoretical grounds. It is satisfactory to find that such an authority as Mr. J. S. Fairbairn entirely agrees with me; he tells me that in the last ten years he has not found it necessary to empty the uterus in a single case. The experience of Mr. Carlton Oldfield, which will be published in full in an early number of the *Journal of Obstetrics and Gynæcology*, is also in complete agreement with the ideas expressed in this paper. I have also heard from several physicians and practitioners that since they became aware of my views on the subject they have successfully cured by psychotherapy cases of pernicious vomiting of pregnancy which previously they would have regarded as incurable except by emptying the uterus.

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SEVERE UTERINE HÆMORRHAGE AFTER VAGINAL OPERATIONS.

BY SIR JOHN PHILLIPS, M.A., M.D. CANTAB., F.R.C.P. LOND.,
HON. PHYSICIAN TO H.M. QUEEN MARY; CONSULTING OBSTETRIC PHYSICIAN TO KING'S COLLEGE HOSPITAL.

IN certain cases profuse hæmorrhage from the uterus has followed shortly after an operation on the vagina; I am not speaking of recurrent hæmorrhage, which often takes place from a vaginal wound itself. Everyone must be aware that it is not uncommon, after a simple perineal suture, to get a few hours of slight metrorrhagia, but in the cases under consideration the hæmorrhage was so profuse as to jeopardise the patient's life.

The first case which called my attention to this complication was that of a young primipara of 24 years of age. She was delivered with forceps, but unfortunately a complete laceration of the perineum took place; sutures were inserted at the time, but union did not follow. Fourteen days after, as the lochia had quite ceased and the uterus had sunk into the pelvis, the medical attendant had the patient placed under an anæsthetic and inserted some silkworm gut sutures, bringing the granulated edges of the laceration together. Within a few hours the patient was attacked by violent hæmorrhage from the uterus, and this organ was found to be much distended with blood, and reaching up to the level of the umbilicus. Grave symptoms of shock followed, and for some days her life was in considerable danger. The physical condition was confirmed by a well-known obstetric physician, who saw her 24 hours after the complication arose. She ultimately recovered, menstruation becoming regular, but she remained very weak for some time and lost control of fæces and flatus. A few weeks later I saw her for the first time, and after careful preparation operated upon the perineal tear and good union followed, no post-operative hæmorrhage taking place. She subsequently became pregnant, and, as the first child had been rather large, I thought it better to induce her labour 14 days before term. A living child was born, and no recurrence of the laceration took place.

The subsequent history of the patient is somewhat interesting. About six years ago—that is, about 15 years after the original operation—she developed signs of commencing Graves's disease, with rapid pulse, loss of flesh, characteristic changes in the blood, and the usual train of symptoms in that disease. After four years' treatment, which included a prolonged rest-cure, followed by a course of X rays and subcutaneous injections of iron and arsenic, she ultimately made a good recovery, and is well at the present time, her menstruation being quite normal, her weight good, and her general health excellent.

This case is, in my experience, unique, and I have never before met a case of ballooning of the uterus as the result of a vaginal operation. I have, however, among my notes, four cases in which alarming hæmorrhage occurred from the uterus after minor operations on the vagina. These were: the removal of a small vaginal cyst from the anterior wall of the vagina, the excision of a fleshy, tender hymen, and two cases of posterior colporrhaphy. In all these four cases the hæmorrhage came on 12 to 15 hours after the operation, and inspection showed that no blood was issuing from the wounds but that it came from the cervix. In each case the hæmorrhage was so alarming as to require saline injections and ergotin subcutaneously, convalescence being prolonged from the resulting anæmia.

Although the uterine hæmorrhage occurred after vaginal operation, it is well known that a woman may be attacked with violent flooding quite apart from menstruation and from some non-pelvic cause, and on three occasions I have been sent for to arrest uterine hæmorrhage, one case being after a gas removal of a tooth, the second after an operation on the breast, and the third after a small operation for external piles. It is also a recognised fact that a patient's period may anticipate its date of onset by as much as a week under certain cases of mental stress or anxiety, as that of awaiting the performance of an operation. It is difficult to give any definite reason for this hæmorrhage, but I think the operator is always well advised, where he possibly can, to make the date of the operation after seven days have elapsed from the day of the last period and not to perform any operation on any patient for six days before the period.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF SEVERE FRACTURE OF FEMUR DUE TO A BULL'S HORN.

BY H. A. LEDIARD, M.D. EDIN., F.R.C.S. ENG.,
SURGEON TO THE CUMBERLAND INFIRMARY.

THE case is that of a ploughman, aged 35, who took a three-year-old bull for its usual morning walk in a lane on April 5th, 1921, when the animal suddenly attacked him, and got him down on the hedge-side. He had known the bull for two years, and was on excellent terms with it. He received the first blow on the chest; when the man was down the bull's horn reached the left femur about the centre, but did not penetrate the skin beyond an abrasion. The bull was driven off by the courageous action of the ploughman's wife.

Diagrams showing Conditions observed by Radiography.

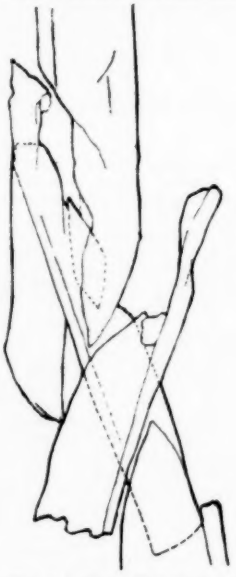

FIG. 1.—Immediately after fracture.

FIG. 2.—About 10 weeks later.

The fracture shown by the tracing of the radiograph (Fig. 1) speaks for itself, as also does the final picture (Fig. 2). The thickening at the site of fracture was massive, but the limb was straight, and shortened by not more than 1½ inches. Treatment was by extension, but no plating was ever contemplated.

The patient was discharged from hospital on June 29th, 1921, on crutches.

EXTROVERSION OF THE BLADDER TREATED BY VESICO-COLOSTOMY.

BY JOHN A. C. MACEWEN, M.B., C.M., F.R.F.P.S. GLASG.,
VISITING SURGEON, GLASGOW DISTRICT HOSPITALS.

THE following case is of sufficient interest to merit record.

The patient, a girl of 17, was admitted to Duke-street Hospital in February complaining of constant dribbling of urine and pain in the back. She stated that she had been operated on three times previously and the abdomen presented several large scars, but the extroversion did not appear to have been in any way improved thereby. There was a gap of nearly an inch between the bones at the pubic symphysis. The urine was loaded with pus, and the temperature was swinging. Medicinal treatment improved but did not cure the urinary condition. Patient's expression was dull and apathetic.

As the plastic operations on the abdomen had not been successful, and it was very doubtful if a Trendelenburg operation would succeed at the age of 17, it was decided to dissect up a flap containing the whole imperfect bladder, with the ureters, and attach it to the pelvic colon, close to the rectum. It was hoped thereby to form a urinary pouch, which would assist in retaining urine and keep the ureters free from infection. The operation proved comparatively easy of performance. The flap of defective bladder was turned up, its edges trimmed; then the open mouth of the bladder was applied to a vertical incision in the pelvic colon, and the two structures carefully stitched together all round. A small piece of packing was inserted for a few days.

Patient made a rapid and satisfactory recovery. There is now a marked improvement in her expression, and she is able to retain urine for about four hours at a stretch.

A CASE OF SARCOMA OF THE MANDIBLE IN AN INFANT.[1]

BY STANLEY P. MUMMERY, M.R.C.S., L.D.S.

THE following case of sarcomatous growth, closely resembling, in its early stages, a dentigerous cyst, is of interest.

The patient was a child of 9 months. In February, 1920, a swelling appeared on the left side of the mouth, which was tapped by the local doctor, and a quantity of serum evacuated. I saw the patient with Sir Arbuthnot Lane a month later. There was a large cystic swelling, apparently springing from the left mandible, and occupying the left side of the mouth nearly to the middle line. The cheek was very prominent, and the lower eyelid pressed up. An X ray showed the second temporary molar imbedded in the outer wall of the cyst, and the germ of the unerupted first permanent molar lying beneath it.

A provisional diagnosis of dentigerous cyst was made, and an operation for its removal performed the next day. At the operation the growth was found to be adherent behind and to exhibit a very definite membranous wall. The contents consisted of serum and mucilaginous material. The pathological report was "small round-celled sarcoma." Treatment by radium was undertaken, and was so far successful that the swelling entirely disappeared in a fortnight.

The patient was seen again on June 11th—three months after the operation—when the swelling had reappeared and was of the same size and appearance as formerly. A second operation was performed on the 16th, and radium again used. The swelling subsided again, but reappeared in a little over two months. On Oct. 22nd the temporary lower canine on that side became loose, and was removed, exposing sarcomatous tissue beneath.

The patient lived until the following January, by which time the pressure of the growth posteriorly on the fauces hastened the end by partial asphyxiation.

[1] Summary of a paper read before the Section of Odontology, of the Royal Society of Medicine on Jan. 23rd, 1922.

German medical papers have agreed, in order to avoid expense, to issue congress reports in common.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

THE DIFFERENTIAL DIAGNOSIS OF THE COMMON EXANTHEMATA.

A MEETING of this Society was held on March 13th, Mr. JAMES BERRY, the President, being in the chair, when Dr. E. W. GOODALL opened a discussion on this subject. He said that the common exanthemata at the present time were scarlet fever, measles, rubella, chicken-pox, small-pox, erysipelas, and enteric fever. Typhus fever was now fortunately rare. He remarked chiefly on the difficulty inherent in the diseases themselves, and added that errors in diagnosis arose most commonly from want of method in examination. In some diseases an accurate diagnosis could be made on a single symptom, such as the buccal enanthem of measles, while in others it was the combination of symptoms that determined the diagnosis. The latter was especially the case in scarlet fever, enteric fever, and some cases of measles. Further, the most characteristic symptom might be absent, such as the rash of enteric fever; or some factor such as vaccination against small-pox might modify the features of the disease. It was remarkable that the bacteriologist could only assist the clinician in one of the eight diseases enumerated—e.g., enteric fever. But this was not so great a disadvantage since the assistance required by the clinician in these conditions must obviously be available at the bedside. While the eruptions of chicken-pox, small-pox, enteric and typhus fever were pathognomonic, the same could not be said of scarlet fever, measles, and rubella.

Scarlet Fever, Measles, and Rubella.

The rash of scarlet fever was a more or less punctate erythema evenly spread over the trunk and limbs, but avoiding the face, scalp, palms, and soles. It might be seen on the neck, the temples, and the skin just around the ears. In some cases it was confined to the trunk and adjacent parts of the limbs. It consisted of two elements, a uniform erythema often preceding the later puncta by 12 to 24 hours. Minute pectechial hæmorrhages might occur, especially at the root of the neck, and in the skin creases about joints. Other conditions producing a rash exactly similar were (1) rubella in the second stage of the rash, and less commonly measles; (2) the prodromal rashes of measles and chicken-pox; (3) enema rashes; (4) drug eruptions; (5) recurrent scarlatiniform erythema. Diagnosis from the rash alone might be impossible, but fortunately other means were available, except perhaps in the case of enema and drug rashes. The most difficult to diagnose was rubella, in which the first eruption of macules or papules gave place after a day or two to an erythema indistinguishable from that of scarlet fever. In the absence of other distinctive symptoms of one or other disease, diagnosis at this stage was impossible. The scarlatiniform prodromal rashes of measles and chicken-pox were not as a rule brilliant, and the diagnosis in the case of measles was readily made by the presence of other signs, notably the buccal enanthem. In the case of varicella a diagnosis could only be made when the pocks appeared, generally within 24 hours. Enema rashes were generally unaccompanied by other symptoms, but he had known pyrexia and even a rigor occur, especially in enteric convalescents, whose temperature was notably unstable. Drug rashes were not so commonly mistaken for scarlet fever, but he instanced one case where a rash produced by quinine, accompanied by pyrexia and circumoral pallor with a trace of albumin in the urine, was mistaken for scarlet fever. A pin-hole desquamation followed, but the diagnosis of scarlet fever was refuted by the recurrence of the rash and symptoms on the readministration of quinine, and by the fact that no further cases of scarlet fever occurred in the ward. The

rashes produced by foreign sera only very rarely simulated that of scarlet fever, and when it did, the distribution was atypical of the infectious fever. Recurrent scarlatiniform erythema in its early stage and during a first attack was exceedingly difficult to diagnose from scarlet fever. He instanced one case of this sort, where the diagnosis had been very difficult. He hesitated to exclude scarlet fever when there were no symptoms other than the rash for the following reasons: (i) he had seen the rash of scarlet fever precede the pyrexia by 12 hours, and unaccompanied by sore-throat or vomiting; and (ii) he had notes of a few cases where the rash was the only sign of what the sequel proved was scarlet fever. The desquamation of exfoliative dermatitis was quite different from that of scarlet fever in the peeling stage. He would not accept peeling as evidence of scarlet fever unless there was a definite history of sore-throat and a rash. The so-called pin-hole desquamation, held by some to be characteristic of scarlet fever, might occur after measles, rubella, urticaria, serum rashes, quinine rash, and other febrile erythemas.

Scarlet fever was therefore difficult to diagnose. No single symptom was characteristic, but the diagnosis could only be made on a combination or sequence of signs and symptoms. The rash of measles, macules and papules, occupying the whole of the skin from the crown of the head to the sole of the feet, varying in size and colour, might be closely simulated in (1) rubella, (2) septic conditions, (3) drug rash, (4) enema rash, (5) prodromal rash in measles, chicken-pox, and small-pox, (6) as a secondary rash in most of the acute infectious diseases. Diagnosis was, however, not so difficult as in the case of scarlatiniform rashes. In the early stages the buccal enanthem (Koplik's spots) was pathognomonic of measles, and their presence should prevent the initial punctate erythema of measles from being mistaken for scarlet fever. Another helpful point was that in measles there was usually a febrile period with catarrhal symptoms for three or four days before the rash. In rubella there were no Koplik's spots, no prodromal period, and very little coughing or sneezing, although the rash in the later stages might closely resemble that of measles. Measles was difficult to detect in mild cases where the rash was indefinite and the temperature did not rise beyond 100° F., but these were, he considered, abortive cases, the rash that had appeared being nearly prodromal, and the attack being cut short during the initial stage. In another rare form symptoms were severe from the onset, and death took place before the proper rash came out, yet these cases might be diagnosed by the presence of Koplik's spots. When Koplik's spots were obscured by septic conditions of the mouth, the diagnosis of measles became very difficult, since septic conditions themselves frequently produced a morbilliform rash. These rashes, however, exhibited a preference for the extremities, and especially their extensor surfaces, and for the neighbourhood of joints. When, as rarely occurred, they invaded the trunk and face, the rash did not appear around the mouth and nose, while the rash of measles generally involved the whole extent of the skin. Serum rashes were frequently morbilliform and accompanied by a good deal of constitutional disturbance, but their distribution was that of the septic rashes already described. Enema rashes were not commonly accompanied by pyrexia. The so-called secondary or accidental rashes were frequently morbilliform, but they occurred a few days or a week after the proper rash of the true disease, or after the beginning of the disease where there was no characteristic rash. Erythema marginatum was not strictly morbilliform, and never occurred as part of the rash of measles, scarlet fever, or rubella, unless it occurred as a serum rash in one of these diseases.

Prodromal Rashes.

His experience of the prodromal rashes was limited, but they were well known to be not infrequently mistaken for scarlet fever and measles. According to the late Dr. Ricketts, the measles rash was more or less confined to the limbs and the scarlatiniform variety to the trunk, where it was prone to be patchy. Both rashes might be present at once. The face was rarely affected, so that the distribution was of the utmost importance. The petechial eruption of small-pox was often accompanied by a dull red erythema, and so was mistaken for scarlet fever. But the distribution was diagnostic, as it is seen chiefly over the lower part of the abdomen and the upper and inner parts of the thighs. It might extend up the sides of the body to the armpits and even encircle the upper arm near the shoulder. The petechiæ were innumerable and might become confluent towards the centres of the affected regions of the skin. These rashes, when localised, were apt to be symmetrical. But septic, serum, and drug rashes might also be symmetrical. The constitutional symptoms of small-pox should, therefore, be sought. Influenza was said to present sometimes an erythema like that of scarlet fever as one of its symptoms. In his experience this was rare. The nearest approach to the rash of scarlet fever that he had seen in influenza was in the case of a woman, aged 35, who was certainly suffering from an attack of influenza with implication of the lungs. On the fourth day of the illness a rash appeared. It consisted of a brilliant erythema involving the trunk, limbs, and face, but in spite of the vividness of the erythema it presented a punctate appearance only in one place, and that was slightly, at the nape of the neck. On the face and forehead there were patches of erythema separated by normal skin. It is extremely rare for the rash of scarlet fever to appear on the face. Just as the punctate erythema of scarlet fever and the papules and macules of measles might be due to other causes than those two diseases, so might papules, vesicles, and pustules be found in other diseases than chicken-pox and small-pox. But the eruptions of these two diseases, taking them in their entirety, were much less frequently mimicked closely than those of the former diseases.

Differential Diagnoses.

The disease most often confused with small-pox was chicken-pox. From the few cases he had seen of chicken-pox in which small-pox was diagnosed or suspected he concluded that doubt arose from one of the following facts: That the eruption was very profuse, that the patient was an adult, that the patient had had chicken-pox before, or that there had been a distinct initial illness of from one to three days before the outcome of the pocks. The most profuse varicella eruption he had seen was in a man, 29 years of age, whose mother declared that he had had the disease when he was a child. Second attacks of chicken-pox were rare. However, the point most strongly insisted upon by Dr. Ricketts in the differentiation between small-pox and chicken-pox was the distribution of the lesions, and next the character of the individual lesions. The eruption of small-pox affected the face and scalp, the distal parts of the extremities rather than the proximal, and the back of the trunk more than the front. The pocks were particularly fond of those portions of the skin that are exposed to stimulation and irritation. In varicella the proximal parts of the limbs were most affected, and the trunk and head indifferently involved.

The most valuable clinical sign in enteric and typhus fevers was the eruption, which was pathognomonic. If the eruption were absent in a case of enteric the diagnosis must be made on the general symptoms and the serum reactions. He had become suspicious of any case labelled typhoid in which the rash was at all plentiful and affected the extremities, since they were sometimes typhus. Cases sent in as typhus were seldom that disease. Usually they were some form of septicæmia with a petechial rash; he had known malignant endocarditis with a rash and measles in which the rash had become hæmorrhagic, erythema multiforme with pyrexia, and hæmorrhagic small-pox to be mistaken for typhus. In typhus the rash seldom

appeared before the fourth day. It consisted of two elements, the superficial macules and papules and the deeper and paler subcuticular mottling. After two or three days minute hæmorrhages took place into the macules, that the rash was of a dusky red hue, and that the face was seldom invaded. Typhus without an eruption must be difficult to diagnose, but Murchison and Sir William Jenner stated that it was unusual. Yet from what Dr. Goodall had been told by medical men in Poland there was reason to believe that the rash was sometimes wanting, especially in young subjects.

Distribution of the Rash in Small-pox.

Dr. W. M. WANKLYN said that the diagnosis of small-pox was a matter of national importance. In this country where four out of five of the population was unprotected by vaccination we had to rely on a screen of medical men who must diagnose cases of small-pox immediately to prevent the occurrence of epidemics. The importance of this was obvious when it was stated that in a recent epidemic in Toronto 3000 deaths from small-pox resulted from one mistaken diagnosis of chicken-pox. While a resident in the Middlesex Hospital at a time when he already had considerable experience of small-pox, he had seen three of the physicians to the hospital diagnose after some doubt a case as chicken-pox. A week later another child came from the same house with unmistakable small-pox. These mistakes should not occur if due care were exercised to consider the distribution of the rash. The rash of chicken-pox was centripetal, whereas that of small-pox was centrifugal as Ricketts had stated, and as he had confirmed by actual counting of the pocks present on various parts of the body in the two diseases. In this connexion he mentioned that diagnosis founded on the distribution of the pox had resulted in the quick stamping out of a recent epidemic of small-pox in the North of England.

Dr. A. F. CAMERON said that small-pox was easily diagnosed, as Dr. Wanklyn had said, by the distribution of the rash, which was still available for diagnosis when the pocks had crusted or even when the patient was dead. Diagnosis could not be founded so definitely on the units of the eruption—the pocks themselves—since they were liable to changes with the progress of the disease and other pathological changes.

Points in the Diagnosis of Scarlet Fever.

Sir JOHN BROADBENT mentioned points in the diagnosis between scarlet fever and other conditions in which scarlatiniform rashes existed, such as rubella, serum, or enema rashes. In scarlet fever there was no rash on the face, whereas in rubella the rash appeared on the face, and there was no circumoral pallor. If the patient with rubella were examined all over the rash might be found to be variable in different parts; it was sometimes morbilliform on the feet. Enlargement of the mastoid glands, not explained by the presence of pediculi in the head, was almost pathognomonic of rubella. In his opinion the appearance of the tongue and throat was never diagnostic. When a scarlatiniform rash occurred during the progress of diphtheria it might be thought to be due to serum, but it was his practice to isolate all such cases immediately, since a combination of scarlet fever with diphtheria in one ward was disastrous. As regards the differential diagnosis between measles and rubella, this was often very difficult, but in his opinion of no great practical importance.

Dr. C. R. BOX criticised Dr. Goodall's statement that the rash of scarlet fever "never" appeared on the palms and soles. For "never" he would say "rarely," since he had on one or two occasions seen a rash in those situations. He also considered that it was important to diagnose between measles and rubella, since the isolation periods were different. Enlargement of the mastoid glands denoted rubella, and would also distinguish this from scarlet fever, which the rash resembled about 48 hours after the commencement of the disease. The most common prodromal rash of measles was a measley rash; in other words, the disease sometimes hung fire for a day or so. Aspirin, quinine, copaiba, and other drugs often produced a scarlatiniform rash, but were usually unaccompanied by pyrexia. Erythema scarlatiniforme in the acute stage was indistinguishable from scarlet fever, and diagnosis could only be made when there was a history of repeated attacks of the kind. Scarlatiniform serum rashes could be distinguished from scarlet fever by the fact that the rash in some parts took another form, either urticarial or with a marginal erythematous form. He had seen cases of scarlet fever presenting typical throat symptoms, where the rash had not appeared until the third or fourth day, and the pinhole type of desquamation was not limited to scarlet fever. He emphasised the fact that Koplik's spots were not easily seen without special experience. He had never seen influenzal rashes.

Dr. F. H. THOMSON said that the late Dr. Ricketts stated he could diagnose small-pox over the telephone from the description of an intelligent nurse. The general practitioner, even if he could not do this, ought to know chicken-pox sufficiently to prevent mistaking small-pox for the lesser disease. He thought that the difference between rubella and scarlet fever might be very difficult on occasions; enlargement of the mastoid glands was not always present, and when present might be attributed to pediculi. He thought the best evidence was to be obtained from the colour, but only 50 per cent. of people possessed sufficiently acute colour vision to distinguish between them. The same remark applied to Koplik's spots, which were easily missed even by the expert.

Sir J. DUNDAS-GRANT said that as a general practitioner in his early days he had seen a case of "scarlet fever" which turned out to be the prodromal rash of small-pox. He stated that in rubella the submental glands also were not infrequently enlarged. He inquired what was the nature of "post-operative rashes," and also whether the appearance of vesicles in the mouth were a useful diagnostic sign of varicella.

Dr. W. W. STOCKER said that as a general practitioner with a large experience of infectious fevers he had found the most useful diagnostic point about scarlet fever was the occurrence of sickness. The presence of enlarged glands was helpful in the diagnosis of rubella, but it should be remembered that about 20 per cent. of normal children presented enlarged glands. He had once diagnosed small-pox from the presence of one spot. The case was isolated and the diagnosis was clinched by the fact that the nurse attending developed confluent small-pox.

Dr. J. H. STOWERS described the ovoid shape of the vesicles, with the longer axis transverse, as being typical of varicella, and inquired whether this was a useful diagnostic point. He said that drug eruptions were very common and should always be considered in doubtful cases.

Dr. GOODALL, in a brief reply, said that the transverse disposition of the long axis of varicella vesicles was due to their preference for the folds of the skin. He had seen cases of scarlet fever in which sickness was totally absent, and he agreed that rubella was sometimes most difficult to diagnose.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AT a meeting of the Metropolitan Branch of this Society held at 1, Upper Montague-street, London, W.C., on March 10th, with Dr. W. H. HAMER in the chair, Dr. F. M. TURNER opened a discussion on

Hospital Isolation in Relation to the Prevention of Scarlet Fever.

He expressed the opinion that hospital isolation had no appreciable effect on the prevalence of this disease. The pioneers of hospital isolation in the "seventies" and "eighties"—Thorne Thorne, Seaton, and others—hoped to establish control of scarlet fever and eventually to stamp it out. From 1890 to 1900, when the promised reduction failed to materialise, a reaction set in.

Wilson, Marriott, and Millard published papers which were looked on as heterodox and by many denounced as harmful to the public interests. Many papers were published, in opposition to Millard's views, supporting the efficacy of the hospitals in reducing scarlet fever, but they were based on local surveys only; the reduction in incidence found was in all cases small in amount, and nowhere reaching 50 per cent. In 1911, after the controversy had died down, the general opinion was voiced by two quite orthodox authorities, Parsons ("Report on Isolation Hospitals") and Seaton ("Infectious Diseases and their Preventive Treatment"), both of whom appeared still to believe in the utility of isolation for scarlet fever, but to take up a much more moderate position. Parsons had said, " . . . . their usefulness in arresting an outbreak of infectious disease at an early stage is more obvious than their usefulness in extinguishing a developed epidemic or in reducing the prevalence of a disease endemically prevalent in a community." Seaton had said that an isolation hospital was not primarily a place for the care and treatment of an infectious disease, but intended mainly for the purpose of preventing its spread, and had concluded that experience in the various parts of Surrey gave no marked evidence of the value of hospitals from a preventive point of view, though he still thought that the illness without hospitals would have been more extensive.

Dr. Turner quoted the scarlet fever figures for London from 1890–1921 (32 years), and observed that the increase in the proportion of cases removed to M.A.B. hospitals (from 42 to 95 per cent.) had not been associated with any marked decline in the notification figures. Parsons had found a reduction in incidence of 21 per cent. in 1901–10 as compared with 1891–1900, but Dr. Turner observed that the earlier period included two epidemic waves of increased prevalence, and the latter one only. His own figures showed a reduction of 13 per cent. in 1906–21 as compared with 1890–1905. In the improbable event of this reduction continuing in the future at the same rate, scarlet fever would be practically extinct in London 140 years hence! Dr. Turner further observed that when at the height of epidemic waves of the disease M.A.B. hospitals had become blocked, and a large proportion of cases had been refused prompt admission, the course of the epidemic seemed to follow its natural bent, rising no more steeply after the failure of isolation than before, and, after reaching its height, falling before isolation overtook the arrears. The great decrease that had taken place in the number of deaths from scarlet fever Dr. Turner could not attribute entirely to hospital treatment. The decline was enormous before isolation came in, more so than after, and there was not much difference in this respect between isolating and non-isolating towns. He was in agreement with the view that what had taken place was a natural change in type of disease. He considered there had been a similar change of type in the case of diphtheria, and that not all the decline in mortality from that disease was due to the antitoxin treatment.

Discussion.

The PRESIDENT raised the question whether surgical and puerperal scarlet fever were identical with ordinary cases, and quoted certain characteristic features of milk-borne cases of the disease. In milk outbreaks there was no further tendency to spread once the infected milk-supply was stopped. He threw some doubt on the correctness of the statistics which made scarlet fever appear to be so much less fatal than formerly, though just as prevalent, and suggested that the diagnosis was now made much more freely in mild cases. He was quite unable to see how it could be denied with certainty that the hospitals had been concerned in the great decline in scarlatinal mortality.

Dr. L. C. PARKES was of opinion that the decrease in scarlet fever deaths was due to a change in type. In the case of diphtheria the fall was less gradual and was accentuated at the time of the introduction of antitoxin. He raised the point whether the small diminution in the incidence of scarlet fever might be due to the diminution in the proportion of children of susceptible ages in the population, as a result of the decline in the death-rate.

Dr. G. E. OATES said that the question of the efficacy of fever hospitals was very important, especially during the present economy campaign. He was in favour of an efficient system of isolation hospitals. Cases nursed at home were often subject to improper care or neglect, from which complications such as nephritis, otitis, &c., would result. He considered hospital isolation necessary from the point of view of treatment. He was convinced that it was isolation that had changed the type. Diseases bred true, and it was the mild cases which escaped isolation, while severe cases were mostly taken to hospital.

Dr. T. SHADICK HIGGINS referred to an investigation into the effect of isolation hospitals in scarlet fever which Prof. John Robertson had made in Birmingham. Full inquiries enabled a record to be made of persons at various ages who had never before had scarlet fever, on the one hand in houses where the first case was admitted to hospital, and on the other hand in houses where the first case had been treated at home. The percentage incidence of secondary cases amongst the susceptible contacts had actually been greater in the first group than the second. Dr. Higgins questioned whether any large proportion of scarlet fever cases were due to direct infection from previous developed and diagnosed cases. Infectious diseases seemed to form a series, in which small-pox and measles were at one end, and diseases like cerebro-spinal fever, at the other. In the former all cases seemed to arise from direct infection from the sick to the healthy, while in the latter, in ordinary civil communities at any rate, no connexion could usually be traced between one case and another, and there was only rarely a secondary case in the same household. Scarlet fever could be placed midway between these groups; while direct infection from diagnosed cases of the disease could certainly occur, it was not the most usual mode of spread. This would accord with his experience that in the great majority of cases of the disease the source of infection could not be discovered. If these views were true it could not be expected that hospital isolation of cases would stamp out the disease.

Dr. C. PORTER said that scarlet fever was a troublesome disease to deal with on account of the difficulty of determining its mode of spread. He instanced a case in which a whole family was infected from a servant who had been operated on for tonsils and adenoids and who herself showed none of the classical signs of the disease. He declared that in few places were fever hospitals better managed than in London.

Dr. W. M. WILLOUGHBY referred to the difficulty in distinguishing from scarlet fever other conditions causing sore throat associated with erythema, especially influenza. He himself paid considerable attention to the characteristic appearance of the tongue and mouth in these cases. This point of diagnosis was a standing difficulty in administration in the Port of London.

Prof. H. R. KENWOOD remarked that typhoid fever had declined in parts of the North of England where housing conditions and sanitation were bad, and had not been improving, and where privy middens abounded. This had not been due to hospital isolation or sanitation, but to a change in type, and he believed that the decline in scarlatinal mortality was of a similar nature. Fever hospital accommodation must be considered from the point of view of reducing mortality as well as incidence. It was an anomaly that so much hospital space was devoted to scarlet fever when cases of other diseases, such as measles and whooping-cough, causing a far greater number of deaths, could not obtain the advantage of hospital conditions. As to the Birmingham figures quoted by Dr. Higgins, he referred to an analogous inquiry made in Manchester and observed that Dr. H. Malet, of Wolverhampton, where a large proportion of scarlet fever cases were treated at home, had made a similar investigation, and had found that there was a smaller incidence of secondary cases in those houses where the first case was removed to hospital.

Reviews and Notices of Books.

CLINICAL PATHOLOGY.

Clinical Diagnosis. A Text-book of Clinical Microscopy and Clinical Chemistry for Medical Students, Laboratory Workers, and Practitioners of Medicine. Fifth edition. By CHARLES PHILLIPS EMERSON, A.B., M.D., Professor of Medicine, Indiana University School of Medicine. London and Philadelphia: J. B. Lippincott Company. 1921. Pp. 726. 35*s.*

IN the ten years which have elapsed since the publication of the last edition of this work much progress has been made in clinical pathology, necessitating a complete revision of the present issue. Dr. Emerson's book deals exhaustively with all branches of clinical pathology. Every investigation and all possible techniques are described in detail, and their clinical applications are fully discussed. The result is a volume which must be of great value to the laboratory worker. In his preface the author deplores the frequent separation of the laboratory and the ward, and insists that the clinician has no right to entrust his laboratory examinations entirely to others, but must hold himself personally responsible for all of them. But the super-physicians who can acquire and preserve clinical knowledge, and a practice, while at the same time possessing an active working interest in clinical pathology on the elaborate lines herein laid down, must be few. No one will dispute that the ultimate estimation of the value of laboratory reports must rest with the clinician in charge of the case, for such reports may often be misleading. For example, as Dr. Emerson naïvely points out on p. 23, there are fallacies even in such a simple test as the examination of the sputum for tubercle bacilli. The specimen may be wrongly labelled, or the sputum cup, slides, or cover-slips, or the hatpin used in spreading the film may have been previously contaminated and imperfectly cleaned. Nevertheless, to expect a practising physician to be an expert in clinical bacteriology, serology, chemical pathology, and the rest, is asking rather much of human powers.

The section on the intestinal protozoa is the weakest in the book. The author appears to be in doubt as to which of the amœbæ are pathogenic, and his teaching on this subject bears no relationship to the knowledge contained in all modern English text-books dealing with this question.

Urinary Analysis and Diagnosis by Microscopical and Chemical Examination. Fourth edition. By LOUIS HEITZMANN, M.D. London: Baillière, Tindall and Cox. 1921. Pp. 362. 22*s.* 6*d.*

THIS book deals efficiently with the chemical and microscopical examination of the urine, and should be of value to the medical practitioner as well as to the laboratory worker. The chemical section is comparatively short, but contains lucid descriptions of all the tests usually employed for the detection and estimation of the inorganic salts, the nitrogen compounds, the protein and carbohydrates, and the other substances occurring in pathological conditions. The second section, dealing with the microscopic diagnosis of the urinary sediment, is more elaborate, and is copiously illustrated with rough drawings which elucidate quite successfully the text. Possibly the author claims more for this method of diagnosis than many workers would allow; and his teaching is not always correct, as where, for example, he describes the occurrence of waxy epithelial cells in the urine in lardaceous disease, and states (p. 239) that "not only the epithelia, but also the connective tissue, and simultaneously the walls of the blood-vessels, may undergo waxy degeneration." But his attempt to differentiate and diagnose lesions in different portions of the urinary tract by the microscopic examination of the urine is logical and praiseworthy.

For this edition Dr. Walter T. Daunreuther has written a special chapter on the determination of the functional efficiency of the kidney.

Essentials of Laboratory Diagnosis. Seventh edition. By FRANCIS ASHLEY FAUGHT, M.D. Philadelphia: F. A. Davis Company. 1921. Pp. 523. $4.50.

THIS text-book on clinical pathology fulfils its purpose well; it is an adequate guide to the various laboratory procedures which are essential and helpful to the making of the diagnosis. The book is well balanced, the descriptions are lucid and succinct, and the author exhibits commendable restraint in not claiming too much for his subject. An unusual feature in a book of this kind is the inclusion of a chapter on sphygmomanometry and sphygmography; and a useful novelty is an alphabetical list of diseases in which laboratory tests are of especial value, with the appropriate examinations indicated, those requiring the services of a laboratory specialist being printed in particular type.

Clinical pathologists with the experience of the war behind them cannot fail to be struck by the weakness of the protozoological sections in recent American works. For example, Dr. Faught diagnoses the *E. histolytica* by observing its amœboid movements, and pays no attention to the structure of its cysts.

AN INDEX OF TREATMENT.

By Various Writers. Eighth edition. Edited by ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital; and JAMES SHERREN, C.B.E., F.R.C.S., Surgeon to the London Hospital. Bristol: John Wright and Sons, Ltd. 1921. Pp. 1021. £2 2*s.*

AFTER an interval of six years the eighth edition of this well-known Index of Treatment has been produced. Opportunity has been taken to re-write some of the articles, such as those on diabetes, hysteria, and neurasthenia, and among the additions are sections dealing with encephalitis, kala-azar, and blood transfusion. For the most part prescriptions are given in detail, a matter of great importance. The value of the work would be increased if this were the rule in every case in which a drug is recommended, for the practitioner may find that information is missing on just that point on which he is seeking help. For instance, in the treatment of dysphagia due to tuberculous laryngitis a cocaine spray is advised, but the strength of the solution and its method of prescription are not given. In the consideration of asthma no mention is made of the cutaneous tests for hypersensitiveness to proteins or of treatment by de-sensitisation. The omissions, however, are for the most part unimportant, and the articles of real value. The Index of Treatment can be recommended as an admirable book of reference.

EMISSION OF ELECTRICITY FROM HOT BODIES.

Second edition. By O. W. RICHARDSON, F.R.S., Wheatstone Professor of Physics, King's College, London. London: Longmans, Green and Co. 1921. Pp. 320. 16*s.*

THIS book impresses the reader not only with the complex nature of the processes by which electricity is liberated from hot bodies, but with the large share which its author has had in establishing the subject upon a firm basis. From the fact, known for nearly 200 years, that air in the neighbourhood of hot solids is able to conduct electricity to an appreciable extent, has sprung up the widely growing subject of thermionic emission. The conductivity of the air referred to is due to the fact that solids, when hot, shower out electricity. Whether they will emit positive or negative electricity depends entirely upon circumstances; but the outstanding feature of electrical emission from a hot solid is that negative electricity in the form of electrons leaves the body and may be detected in the surrounding space. If an electrical

field be applied to these electrons, they may be directed at will, and their speed may become so high that they constitute a radiant stream exactly analogous to the cathode rays which are the prime movers in the production of X rays.

The study of this electronic emission is best carried out in high vacua so as to eliminate the presence, and avoid the disturbances, of gases which may have some chemical action upon the glowing solid. As the whole phenomena become increasingly marked at high temperatures, it will be seen that very exacting conditions have to be satisfied for researches on this subject. The book deals in an exhaustive fashion with practically the whole range of phenomena of this kind; mathematical treatment occurs with some frequency through these pages, but the purely experimental work can be grasped by any reader who is content to leave the mathematical proofs as essential to the subject but not necessary for himself. The applications in scientific apparatus of thermionic principles are numerous. The Coolidge X ray tube owes its origin to these discoveries, and the thermionic valves now used so largely in wireless telephony and in other directions have the same basis of action.

The book is a valuable one, clearly and attractively written and containing a vast amount of information on a subject upon which research has been particularly fruitful.

OTOLOGY.

Diagnostik und Therapie der Ohrenkrankheiten. Ein Hilfsbuch für den praktischen Arzt. By Dr. CONRAD STEIN, Privatdozent for Otology in the University of Vienna. Bonn: A. Marcus and E. Weber. 1922. Pp. 276. M.48.

Dr. Stein is so impressed by the large number of students who go out into practice without having learnt to see the drum of the ear, or without being able to interpret what they see, that he has set out a guide to the diagnosis and treatment of ear disease based on symptoms and signs other than those afforded by otoscopy. It is obvious that in many diseases of the ear it is highly dangerous to undertake the management of the case without the ability to make a proper examination, but Dr. Stein shows that he is aware of this by mentioning various occasions in which the assistance of a specialist is essential. In remote country districts, which are doubtless more numerous in Austro-Hungary than in England, the general practitioner must undertake the treatment of cases of ear disease; the proper course is to learn how to examine the ear, but to the many who are unable to do so this book should be a help in the understanding of their cases and in a recognition of the various danger signals. The author has found that he could not go very far without describing the appearance of the drum, but in general the signs elicited by otoscopy are kept in the background.

About two-thirds of the book is occupied with diagnosis, the remainder with treatment. With a view presumably to rendering the subject-matter more accessible to the unskilled, Dr. Stein has arranged his material entirely on a basis of symptomatology, under the headings, pain, discharge, deafness, giddiness, swelling, fever, and so forth, and this order is repeated in the later section on treatment. The result discredits the method, for there is much clumsiness and unnecessary repetition, especially in the part devoted to treatment; for instance, the treatment of eczematous swelling cannot conveniently be discussed in a separate section from that of eczematous discharge. But the book contains much sound practical advice; for example, the recommendation of early paracentesis in acute inflammation of the drum. This little operation can ordinarily be performed by the practitioner, and if done more frequently would save much pain and prevent a great mass of the all too common chronic aural suppuration. It is a pity, however, that the author states that no special cleaning of the operation area is required, for secondary infection through the meatus is a powerful cause of chronic otorrhœa. The reminder that cessation of discharge does not imply cure of the disease, unless at the same time all the other symptoms disappear, is sound. The book would have been the better for a good index.

The Submucous Resection of the Nasal Septum. By W. MEDDAUGH DUNNING, M.D., Consulting Otologist, Fordham Hospital, N.Y.C., &c. New York: Surgery Publishing Company. 1921. Pp. 97.

SUBMUCOUS resection of the septum is a most valuable operation, the good effects of which can perhaps only be fully appreciated by those who were familiar with intranasal surgery before its introduction. The operation is beset with considerable technical difficulty, and although good descriptions are accessible in all the standard text-books of rhinology, a monograph on its performance, on the choice of position, of methods of anæsthesia, of instruments and technique might well be useful to the younger rhinologists. It is therefore to be regretted that Dr. Dunning has so completely failed to provide a useful account of his subject. The first chapter contains an incomplete description of the anatomy, dealing mostly with the outer wall of the nose, only one page being devoted to the septum. The second chapter is occupied by a totally inadequate account of the physiology; the important functions of warming, moistening, and filtering the air are recorded in one short sentence, and no mention is made of the general effects of nasal obstruction. In the third chapter septal deviations are classified, but only into S- and Z-shaped deformities, and the interesting problems of their ætiology are disposed of in the statement that the majority are traumatic. The fourth and fifth chapters describe the technique of the operation; the sitting posture and local anæsthesia by surface application of cocaine and adrenalin are the only methods mentioned; a few instruments are figured but none are described, and the account of the actual technique of the operation is confused and unhelpful. The illustrations, though numerous, do not make good the deficiencies of the text, the frontispiece giving an indistinct view of the outer wall of the nose, which is a curious enough beginning for a work on the septum.

ACUTE EPIDEMIC ENCEPHALITIS.

(Lethargic Encephalitis.) An Investigation by the Association for Research in Nervous and Mental Diseases. Prepared under the direction of WALTER TIMME, M.D., and others. New York: Paul B. Hoeber. 1921. Pp. 258. $2.50.

THE first report of the newly-formed Association for Research in Nervous and Mental Diseases contains an account of the papers and discussions at the meeting of the Association held in New York on Dec. 28th and 29th, 1920, when the subject for consideration was acute epidemic encephalitis in all its aspects. Some 35 contributors dealt in detail with questions of ætiology, symptomatology, morbid anatomy, pathogenesis, and experimentation—the result being a compendium of expert knowledge of great theoretical and practical value. It is difficult to summarise succinctly the conclusions reached by the Commission of the Association since they cover a very wide field, but some of them may be briefly alluded to. The disease, in Achard's words, is undoubtedly "polymorphous and acyclic." Some ten differing clinical forms are recognised, so diverse, indeed, that their essential unity might appear improbable were it not for pathological confirmation. The truth is simply that the encephalitis may affect any part of the encephalon, not to mention the meninges, cord, and roots or nerves. Among these types the somnolent-ophthalmoplegic, the paralytic, the amyostatic (Parkinsonian), and the hyperkinetic are the commonest. Notwithstanding the attention devoted to the pathology of the condition, it is still doubtful whether there is complete specificity in the process, and the results of experimental pathology are not as yet conclusive. The work of a number of investigators,

however, not only in America, but also in England and on the Continent, points to epidemic encephalitis being caused by a living specific infective agent, different from that of poliomyelitis, and there is little doubt that ere long the problem will be completely elucidated.

Apart from the intrinsic value of this report, we should not like to let the opportunity pass of emphasising its significance as a fine example of what can be accomplished by team-work. The very admirable presidential address by Dr. Walter Timme which introduces the volume lays stress on coördination of effort as necessary to medical advance, and the Association is to be congratulated on the success with which their programme has been inaugurated.

LETTERS TO A NURSE.

By a MIDLAND DOCTOR. London: John Bale, Sons and Danielsson. 1921. Pp. 99. 5*s*.

IF every nurse in training had a mentor as kindly, humorous, and sane as the midland doctor whose letters to his niece form the substance of this little book, her life as a probationer would be less harassed and more useful. Dr. F. G. Layton—we assume the author of the preface to be the author of the book—shows her where to conform, when to rebel, and how to retain an intellectual humility without loss of self-respect. Moreover, besides a heartening commentary on most of the professional aspects, as well as on the minor joys and grievances of her first year's training, the nurse who reads these pages will obtain a sounder conspectus of normal and abnormal physiological processes than she is likely to acquire from a text-book. On p. 30 this valuable uncle writes: "The mechanism of circulatory failure is not really quite so simple as I have explained it, but for all practical purposes what I have told you is true," and this applies also to the teaching on the pathology of various infective processes, the principles governing asepsis—in fact, to all the dogmatic chapters in the book. And when he touches on the psychology of matrons, the despotism of the ward-sister, and the abuses maintained by the survival of the conventual atmosphere in hospitals, he shows a piercing insight into the everyday life of the nurse Do members of the honorary staffs of hospitals realise that nurses are often expected "to put up with a dietary which would cause a self-respecting housemaid to throw up her job"? And do many of them envisage as clearly as the author the factors determining the 11½ hours working day still demanded of nurses in some institutions? Dr. Layton has some hard words for nurses also, which ill conceal his affectionate regard for their welfare. He has no use for the ward-nurse who scorns the "neurotic" patient, nor for the probationer who strives to placate her superior by small gifts; moreover, he affects to have lost all patience with a profession which puts up with obsolete conventions and conditions without an attempt at collective protest. Dr. Layton pleads throughout for more humanity and imaginative understanding in hospital life—in the life of patients as well as nurses. Every page of the book contains a trenchant argument, a lucid explanation, or an inspiring word, and no medical man who picks up one copy will be able to refrain from buying another as a gift for a nursing colleague.

THE COLLOIDS.

An Introduction to the Physics and Chemistry of the Colloids. Fourth edition. By EMIL HATSCHEK. London: J. and A. Churchill. 1922. Pp. 172. 7*s*. 6*d*.

THE properties of colloids play such a large part in modern physiology, biochemistry, and pathology that a short intelligible account of them will be welcomed by many readers. So much nonsense and quackery has resulted from ignorance in this direction that it is high time that something was done to restore a sane outlook on the subject. We know of no book better fitted for this salutary purpose than the one now under review. It deals only with the chemical and physical properties of colloids. That is all we need. The time is certainly not yet ripe for extensive and decisive application of colloid problems to medicine, but once the haze of mystery is removed, and the subject presented in a rational way, an intelligent use of physiological and pathological data will in time automatically do the rest. The author is a recognised authority on colloid chemistry and physics; his training and experience qualify him pre-eminently to produce such a book as this, and he has done it extremely well. Very little mathematics is introduced, and anyone with an ordinary "intermediate" acquaintance with physics and chemistry can read the book with ease. Where there are real gaps in our knowledge the author points them out. A feature of the work, remarkable in one of such small bulk, is that it stimulates the reader to propound fresh problems of his own accord; later on in the volume these questions answer themselves. He thus gains the impression that he has really grasped something, and has got hold of it by the right end; the feeling of confidence so engendered is very valuable.

JOURNALS.

BIOCHEMICAL JOURNAL. Vol. XV., No. 6. 1921.—Note on the Fermentation of *i*-Inositol, by J. A. Hewitt and D. B. Steabben.—The Metabolism of Carbohydrates: Part II., On the Possible Occurrence of Stereo-Chemical Changes in Equilibrated Solutions of Reducing Sugars introduced into the Circulation, by J. A. Hewitt and D. H. de Souza. Equilibrated solutions of *d*-glucose, *d*-fructose, and *d*-galactose on injection intravenously into rabbits or dogs undergo no stereo-chemical changes and the equilibrium is unaltered in the urine excreted.—A Contribution to the Study of the Interconversion of Carbohydrate and Lactic Acid in Muscle, by D. L. Foster and D. M. Moyle. Direct chemical determinations show the reconversion of a large fraction of the lactic acid liberated during a muscular contraction into glucose. Evidence for synthesis of hexose-phosphate was also obtained.—Blood Enzymes: I., On the Occurrence of Maltase in Mammalian Blood, by A. Compton. Maltase occurs in the bloods of some animals, e.g., dog, but is completely absent from the bloods of rabbit and man, an important fact to be kept in mind during investigations of carbohydrate metabolism.—Urochrome as a Derivative of Chlorophyll, by H. E. Roaf. Chlorophyll, but not carotene, increases the output of urochrome.—The Estimation of Carnosine in Muscle Extract (Preliminary Note), by G. Hunter.—A Study of the Combined Action of Raw Cow's Milk and Orange-Juice as Anti-scorbutic Substances, by S. Wright. It appears that when the mixture of anti-scorbutic substances is administered the combination might be somewhat more potent than when proportionate amounts of the same substances are administered separately.—The Origin of Milk-Fat and its Relation to the Metabolism of Phosphorus, by E. J. Sheehy. The milk-fat arises from phosphatids transported by the blood to the mammary glands; of the phosphoric acid liberated from these compounds some is also secreted in the milk, while the remainder is reabsorbed into the blood-stream.—Studies of the Coagulation of the Blood: Part I., Some Physico-Chemical Aspects of Coagulation. Many of the recognised facts relating to blood coagulation can be explained in terms of the physico-chemical phenomena of the precipitation of colloids. It is suggested that coagulation commences as a reversible process of gel formation, and that this is followed by a chemical reaction in which fibrin and thrombin are produced.—The Distribution of Carnosine in the Animal Kingdom, by W. M. Clifford.—A Note on the Physiology of the Ship-worm, by C. R. Harington.

ROENTGEN SOCIETY.—The Silvanus Thompson memorial lecture will be delivered by Sir Oliver J. Lodge, F.R.S., on March 21st, at 8.15 P.M., at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C. 2, the subject being Magnetism and the Ether.

DEATH-RATES AS A MEASURE OF HYGIENIC CONDITIONS.

WE have already made comment[1] upon two points raised in Dr. J. Brownlee's special report[2] to the Medical Research Council, but Dr. Brownlee's contribution should be read in full by all health officials and others engaged in the use of vital statistics, even though in doing so they can be promised much that is paradoxical and puzzling. Dr. Brownlee has an original mind, and it will be useful for all to receive a general shake-up in the use of the too stereotyped methods of statistical statement now generally employed. This is so, although we think that some of Dr. Brownlee's suggestions and conclusions, if adopted, would cause confusion, and their adoption might not in all instances be practicable.

After an introductory chapter on the importance of stating death-rates for different age-groups in terms of the population at the same ages, he proceeds to a discussion of standardised—formerly called corrected—death-rates for all ages in the aggregate, and a comparison between these and life-table death-rates. A standardised death-rate is merely a summation of the death-rates at successive age-periods, in which any anomaly due to variation in the numbers living at different ages has been eliminated by a simple arithmetical calculation. Such standardised death-rates were first devised in the General Register Office, during Dr. Ogle's tenure of office as superintendent of statistics. They have since then been extended and made more completely accurate; and it is now possible by their means to institute trustworthy comparisons between the experience of different localities and countries, and for special causes of mortality, while avoiding formidable arrays of figures for successive age-periods. That the value of standardised death-rates is becoming widely appreciated is shown by their adoption in the Federal statistics of the United States and in some other countries. But in Dr. Brownlee's view these rates are no more than a *pis aller;* and their use is to be deprecated, now that by means of the relatively simple short methods of constructing a life-table, life-table death-rates for a stationary population can readily be calculated. We think that Dr. Brownlee's view on this point is erroneous. The statement of death-rates separately for the two sexes and for different age-groups, and their summation in standardised death-rates, thus eliminating the influence of variations in age-constitution of population, so completely set out the vital conditions of communities that it may fairly be urged that the construction of a life-table is unnecessary for most public health purposes; and this has indeed been stated by actuarial writers.

A life-table death-rate shows the ratio in a stationary population between the number living above a given age and the number of deaths above this age, and simplifies formulation of the thesis that individuals grow old at different rates in town and in country. But Brownlee regards this life-table method as supplying "in many cases the only figures on which it is safe to found a theory of mortalities." Here is given the clue to the main conception in Dr. Brownlee's contribution. By this means "it will be possible to eliminate to a large extent the difficulties which arise on account of the different rates at which individuals grow old in town and country, differences which determine great alterations in the age-incidence of disease."

The subject may be illustrated by two of the chief sections of Dr. Brownlee's report, on phthisis and cancer respectively. We find that for phthisis standardised death-rates are for nearly all purposes equivalent to life-table death-rates; but that when cancer is investigated this is far from being the case. Thus for ages 15 and over, the male standardised death-rates from cancer per million living, compared with corresponding life-table death-rates, are as follows:—

	County boroughs.	Rural districts.
Standardised death-rate ..	1391	1106
Life-table " ..	1985	1993

Here we are challenged by a great contrast between the two results. Consider how these have been arrived at. The standardised death-rate for cancer has been obtained by applying to a standard population selected for universal use, the known death-rates from cancer experienced in county boroughs and in rural districts respectively; while the life-table death-rate for cancer in each instance is concerned with the subsequent experience of a given number of persons who have survived to be 15 years old. By the life-table method the apparent aggregate death-rate from cancer is disproportionately increased in rural districts, because in these districts a larger number of persons than in towns survive to the ages at which cancer is pre-eminently fatal. But the standardised death-rate has eliminated the influence of the larger number of survivors to higher ages in rural districts; and the two standardised death-rates given above accurately represent the relative incidence of fatal cancer in rural districts and in county boroughs for given numbers living at each successive age-period. Compare this with Dr. Brownlee's nearly equal death-rates according to the life-table method for town and country, which are given above. Having done this, let us examine the facts in detail, taking female cancer mortality as our illustration. The figures given in the Registrar-General's annual report for 1912 may be utilised. Per 1000 living at ages 35–40 the county borough and rural cancer death-rates were 0·6 and 0·6 respectively, at ages 40–45 they were 1·14 and 0·97, at ages 45–50 they were 2·11 and 1·49, and so on to the age 65–70 when the difference was that between 6·15 and 5·96. These excesses of town over rural death-rate at each successive age-period are lost when the statement of death-rates according to ages or their summation in standardised rates is abandoned; and by the life-table method Dr. Brownlee abandons these important facts of relative experience on the ground that "the effect of different environment on the physiology of the inhabitant has not been considered"; and because in his view "in towns the same degree of senescence is found at an earlier stage than in the country."

Dr. Brownlee is, in fact, concerned with another death-rate, not the one in general use; and it is only in the light of this different conception that his results can be quoted without risk of error. The term "death-rate" needs to be defined. In ordinary usage it means the ratio of the number of deaths at a given age occurring in a year to the population of a given age in a given area. Dr. Brownlee appears to postulate that a death-rate is a comparison between the rates of mortality of persons at the same physiological age, and that it may therefore be necessary to compare the experience of a rural population at a given age with that of a town population six years younger. But this comparison of physiological ages—if his hypothesis be accepted—involves serious and perhaps, not always, warranted assumptions; it savours a little of *argumentum in circulo*, and what is required for public health purposes is a measurement of relative resistances to disease at a given age. For speculative considerations having wider scope the method adopted by Dr. Brownlee should give valuable suggestions; but the method, as shown in his report, does not apply equally to all diseases, and unless the cautions indicated above are borne in mind, an element of confusion may be introduced.

[1] THE LANCET, Feb. 18th, p. 332, and Feb. 25th, p. 385.
[2] The Use of Death-rates as a Measure of Hygienic Conditions, by Jno. Brownlee, M.D., D.Sc. (Special Report Series No. 60, of Medical Research Council.)

A post-graduate course in deep X ray therapy is being held at Frankfort during the last fortnight of March. From April 23rd to 25th a Rontgen Congress meets in Frankfort.

THE LANCET.

LONDON: SATURDAY, MARCH 18, 1922.

Medical Orthopædics.

ORTHOPÆDIC surgery has been long in finding its appointed place, partly no doubt for want of a proper definition. Recently its scope has been defined as the recognition and practice of definite principles and treatment—whether operative, manipulative, or educational—which lead to the restoration of function in nerves and muscles and in deformed or disabled limbs. Orthopædic centres, organised by Sir ROBERT JONES during the war, and later known as special military surgical hospitals, were largely occupied in remedying the after-effects of war injuries, many of which could have been prevented by knowledge of orthopædic principles. It is no reflection on the zeal and devotion of the staffs of the smaller V.A.D. hospitals to admit that they afforded a plentiful aftermath of secondary deformities and disabilities of joints when the primary injuries due to enemy action had been relieved. And the dropped foot, the everted hip, the flexed knee, the extended elbow-joint were often harder to cure than the original lesion.

But orthopædics have to overtake the results of medical as well as of surgical neglect, and the physician dare not point the accusing finger, for much of the crippling which follows painful affections of the joints could be foreseen and avoided, even if the progress of the arthritis cannot yet be prevented by early attention to its cause. So keen an observer as Mr. F. CALOT, of Berck-sur-Plage, has drawn a picture of what has happened in France since the treatment of orthopædic affections has become accessible to all practitioners. The practitioner, he writes, can treat and cure these conditions if, and only if, he tackles them at the early period of their existence. Rheumatoid arthritis and allied conditions, as Prof. ALAN H. TODD reminds us in the Hunterian lecture which we print on another page, are responsible for a very large amount of physical disability, patients of all ages and in all walks of life becoming crippled by the condition. The nomenclature of this deforming disease is still vague and unscientific, the various forms described possibly being only variants of what is fundamentally one disease. Affecting women more than men in the proportion of three to one, it occurs with distressing frequency in the middle-aged and even in the young. While we have little doubt that the disease is due to infection of the joints and is often associated with the presence of foci of infection in other parts of the body, we are far from being able to afford practical help to the sufferers from an application of this knowledge. And it is a regrettable fact, as Prof. TODD states, that an orthopædic surgeon seldom sees a case of rheumatoid arthritis free from deformity, whereas all deformity in rheumatoid arthritis is essentially preventable, arising as it does either from faulty posture or adaptive changes which can be foreseen and avoided. The nurse who supports the patient's knees with a well-meant pillow is leading up to flexional deformity for the sake of present comfort. The bedrid feet, unsupported by foot-rests or some form of bed-splint, will tire and drop, to become permanently fixed in the equinus position. The valgus posture, at first assumed by the person with rheumatoid disease of the ankle bones in order to lock the joints and render them less painful, becomes organically fixed from periarticular adhesions. The condition has serious economic consequences for many working men and women in whom, when even single joints are affected, the disability is often so considerable as to interfere seriously or even entirely with remunerative occupation. In cases of multiple infection of joints a lamentable proportion of patients become sooner or later completely disabled and from the industrial view incapable of self-support.

Prof. R. W. LOVETT, of Boston, has already shown how much may be done to preserve or restore the functional ability of joints which have been damaged by this disease, and Prof. TODD'S Hunterian lecture is a welcome addition to our knowledge of the detailed treatment of such disabilities. Undoubtedly this aspect of the treatment of rheumatoid arthritis has received insufficient attention, for it often happens that a patient in whom the arthritis is no longer active or progressive remains seriously crippled by the deformity which has arisen. Many such are to be found in infirmaries and institutions for incurables. With a more complete system of orthopædic treatment, such as might well be instituted in connexion with Poor-law infirmaries, much of this disability would be alleviated and much industrial capacity restored.

The Kinematograph and Health Propaganda.

AMONG the various measures adopted, more particularly in America and France, for the purpose of warning the public against the cause and effect of communicable disease, the kinematograph has of recent years filled an important place. Considerable credit is due to the painstaking work and ingenious skill of those responsible for the production of the films, which deserve to be widely exhibited in the interests of the general welfare of the community. Hitherto the use of this up-to-date method of spreading the gospel of health has attracted comparatively little attention in this country, although it is one well worthy of prominence and would, with advantage, replace many of the sensational film-shows daily filling the halls in London and the provinces.

An exhibition of a propaganda film of great interest, produced by the Rockefeller Foundation in the campaign against hookworm disease in America, was recently given by Prof. R. T. LEIPER for the first time in England before the Section of Tropical Diseases of the Royal Society of Medicine, under the popular but appropriate title of Unhooking the Hookworm. The film, which was accompanied by a simple explanatory legend of the hookworm disease in terms easily to be comprehended by school-children, gave a vivid representation of the life-history of the parasite and of its harmful and debilitating effect, particularly in the case of young people. Infection was traced from its source in the insanitary conditions of defective latrines, which resulted in fæcal contamination of the ground outside, and thence led to its dissemination by animals and the feet of human beings throughout and beyond the enclosing grass plot. Subsequent contact of children's bare feet with the polluted grass, bearing in the dewdrops the active living hookworm larvæ, showed how readily its transmission took place through the skin of the sole and between the toes of the victim. The actual process of penetration of the embryo through the pores of the skin was then displayed on an enlarged scale, and its subsequent passage through the circulation and respiratory system to reach the

stomach and intestines was graphically represented in a picture of the outlined human anatomy with a moving indicator recording the path of the larval worm. The stages of intestinal development from embryo to adult worm figured in moving microphotographs of remarkable detail, which also showed the implantation of the now full-grown worm by its armature to the mucous membrane of the bowel, and the effect of the numberless local lesions leading to intestinal hæmorrhage and ulceration.

The results of infection were given in a series of pictures, some showing the blood films of marked anæmia, in comparison with the healthy blood, others portraying the lassitude, stunted growth and development of the infected child in contrast to the good physique of a healthy child of the same age. The importance of parents realising the necessity of seeking medical advice, as soon as signs of ill-health and failing strength are manifest, was emphasised by scenes in the home, in the consulting room and laboratory, where the larval hookworm from a specimen of the child's fæces is discovered and shown as it appears under the microscope. There followed the prescription and administration of a capsule of oil of chenopodium succeeded by saline purgative, and the result—a mass of the dead hookworms. The rapid response to treatment and speedy restoration of the child to robust health and activity formed a fitting conclusion to a striking achievement in film production and health propaganda.

Electrical Injuries.

THE advances in the use of electricity bring with them their own train of sacrifice of human life and limb, and with the ever-increasing sphere of electrical application it is only to be expected that the casualties produced by the electric current will be increased in proportion. It behoves us, therefore, not only to make ourselves familiar with the special characteristics, clinical and medico-legal, of the injuries so inflicted,[1] of the complications to be anticipated, and of their appropriate treatment, but also to study the best means of prophylaxis. In Switzerland it has been particularly easy to trace the increase in the number of electrical injuries, because since 1903 electrical accidents have been notifiable. The casualties have steadily increased (the war period being neglected), until in 1920 the number was more than double that for 1904—viz., 98 in 1920 and 46 in 1904. HANS JAEGER[2] has compared the number of casualties with the increase in electrical installations, and finds that, thanks to official control, the *relative* incidence has not increased; thus in 1904 the casualties, numbering 46 in all, were 8 to every 1000 kilometres of wiring. This number subsequently decreased to 3, 4, and 5, but rose again to 7 in 1920, when there was a great increase in installations, the total casualties amounting to 98. In legislating for the installation of electric power and the safeguarding of life, electrical currents have been divided into "strong" and "weak," according to their action on the human body, "strong" currents being those which have an injurious effect, while "weak" are those which are supposed to be harmless. JAEGER points out that the danger to life depends upon many other factors besides that of the strength of the current. The human body would be a good conductor of electricity, owing to its fluid and salt content, if it were not for the isolation afforded by the skin. But the resistance of the skin varies with its thickness and its dryness. A man bathed in moisture should form a much better conductor than one with a dry skin, and this theoretical point is borne out by the observation that the number of accidents varies directly with the meteorological conditions. Nearly twice as many occur during the hot months of the year as during the cold, and, excluding those due to lightning, the explanation is apparently to be found in the increased formation of perspiration in the summer months. Unfortunately, even in the latest text-books it is set down that currents of 100 to 150 volts are harmless, while those of 200 and over are dangerous. This is incorrect; cases of death from currents of 50 volts, when acting under conditions of dampness, have been recorded. At a session of the Paris Academy of Medicine, held on Feb. 7th, it was pointed out that currents of low tension (200 volts or less) might cause cardiac arrest with fibrillary contractions. Two cases were quoted in which the victims while in a bath touched, in one case an electric radiator with faulty insulation, in the other a metal bell-pull into which there was a leakage of current. In a third case a workman was electrocuted by a current of 135 volts from a hand-lamp while working in a boiler. In Switzerland, during 1919, six deaths occurred from contact with ordinary hand lamps, and during the war period 11 fatal cases were reported in the German literature from the therapeutic application of a sinusoidal alternating current of 50 volts and under. Besides the strength, frequency, and nature of the current, and the resistance opposed to it, the danger of any particular current is influenced by the following factors: (*a*) the site of entrance into the body, (*b*) the duration of the contact, (*c*) the size of the area under contact, (*d*) the physical condition of the individual (status lymphaticus increases the susceptibility), and (*e*) the psychic component. Expectation of a current diminishes its effect, while surprise increases it. An example of this factor is afforded by an engine driver, who made a habit of catching hold of a 500 volt clamp with both hands, and letting go again, as a bet for a glass of beer. He repeated this game as often as the beer was forthcoming, until one day he accidentally came into contact with the lamp, under the same conditions, and collapsed dead on the floor.

The clinical aspects of electrical injuries are characterised by great variability in their immediate symptoms, in their course, and in their late effects. Their features are, however, as a rule so characteristic that it is possible, as in hardly any other form of injury, to reconstruct accurately the method of their causation. The immediate effects can be divided into general, local, and distant. Of the general, the most important is "electric shock," associated with unconsciousness of variable duration, which simulates concussion and is often followed by a maniacal stage of cerebral irritation. This condition may occur even when the current did not pass through the central nervous system, and is probably reflex in origin. The local effects consist chiefly in burns at the sites of entrance and exit of the current. The lesions are characterised by anæmia, dryness, and insensitiveness, due to massive coagulation necrosis. Subcutaneous emphysema has often been noted, but the cause of its production is not clear. Shedding of the superficial layers of the skin is common, but is not comparable with that produced by ordinary burns. The skin comes off as a complete layer, with the hair attached to it intact, and may be found attached to the conductor which produced the shock, or hanging to the clothes covering

[1] A discussion on the Pathological Changes produced in Subjects rendered Unconscious by Electric Shock will be opened by Dr. Morison Legge at the Section of Electro-Therapeutics, Royal Society of Medicine, to-night (Friday), at 8.30 P.M.

[2] Schweizerische Medizinische Wochenschrift, Dec. 29th, 1921.

the part. This phenomena is pathognomonic of electrical injuries, and is therefore of the greatest medico-legal importance. Œdema of the part is of common occurrence. It is not associated with inflammatory reaction, but appears rather to be the result of changes taking place in the walls of the vessels, the intima and elastic tissue being the chief sufferers. These changes explain the occurrence of necrosis of the whole extremity. The entire arm has been known to become gangrenous, the blood-supply being cut off either at the time of injury or some weeks later. A case witnessed in the Zürich clinic illustrates this phenomenon; the current passed from the left hand to the left foot, and led to an immediate gangrene of the foot, the upper limit of the gangrene taking the exact line of the wet sock the patient was wearing at the time. Distant lesions occur at points other than those of entrance and exit of the current.

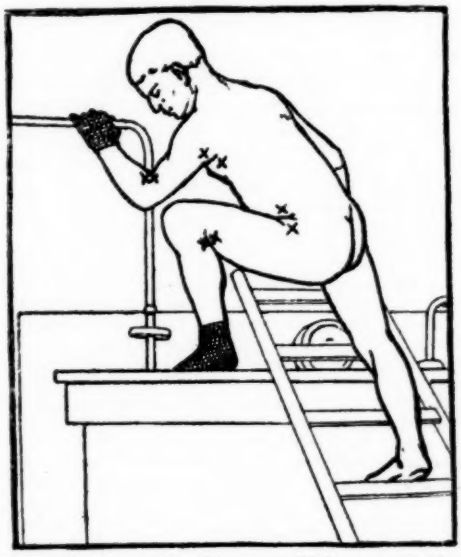

Diagram showing points of flexion, with burns (xx), of exit and entry at each "bridge." The shaded area shows the extent of the burns of the hand and foot.

Typical of the lesion are two small burns occurring at every point of flexion of the limb through which the current passes. A patient, with burns of entrance and exit in the left hand and foot respectively, showed also burns on the flexor aspect of the left elbow, in the left axilla, in the left groin, and in the left popliteal region, demonstrating that these points had been in flexion at the time of the injury (see figure). It is clear that in these cases, the current, instead of passing through the middle of the limbs and trunk, jumped across the bridge formed by the apposition of the skin of the distal and proximal segments of the limb, and produced a burn of exit and entrance at each bridge. This type of lesion is called by JAEGER "Etappenläsion." He finds that it never occurs when the limb is extended. The condition is important owing to the proximity of the large vessels, and to the danger of contracture on cicatrisation. Spontaneous dislocation has been known to occur, due to strong tonic muscle contractions. The internal organs, heart, and kidneys may suffer, the affection probably being due to toxæmia as produced in ordinary burns, but the condition may be noted immediately after the injury.

Among the late effects, extending necrosis plays an important part, the primary necrosis extending in area and in depth, and not infrequently attacking the underlying vessels. The pathology appears to be a spreading necrobiosis, and not only may the local lesion increase in size, but the whole limb may be placed in jeopardy. In a 16-year-old patient total mummification of the arm with spontaneous fracture of the humerus and spontaneous amputation occurred in the sixth week. The radial pulse was palpable up to five days after the injury. Secondary hæmorrhage is of frequent occurrence, and should in every case be prepared for. Lesions of the skull lead to osteomyelitis and sequestrum formation, but only one case of subsequent cerebral abscess has been recorded. Nervous disturbances are common; they were previously thought to be entirely functional in origin, but JELLINEK has demonstrated the presence of cell degeneration in the central nervous system. This explains the development of symptoms of tabes dorsalis, hæmatomyelia, lateral sclerosis, multiple scleroses, and bulbar paralysis, any of which may become apparent weeks or months after the accident, and render the prognosis very uncertain. In regard to prophylaxis the precautions suggested at the Paris Academy of Medicine should be memorised: 1. Never to touch any part of an electric lighting or heating apparatus with wet hands. 2. Never to handle any part of an electric lighting or heating apparatus while touching water taps or pipes or any other metal which will make a good contact with earth. 3. To fix electric fittings as far as possible away from water fittings.

A TRAINING SCHOOL FOR MIDWIVES.

H.M. the QUEEN is announced to open the new buildings of the British Hospital for Mothers and Babies at Woolwich on Thursday, March 23rd. The ward block, antenatal block, and part of the administration block have been completed with the aid of a sum of £20,000 from the Ministry of Health, being two-thirds of the promised grant of £30,000, and on April 1st it will be possible to open the hospital to a large number of expectant mothers in Woolwich. It is just 20 years ago since the Home for Mothers and Babies was established on a small scale, with the object of becoming eventually the National Training School for District Midwives, which it now is. The aim is secured by the presence on the managing committee of six nominees of the Council for the Promotion of the Higher Training of Midwives along with representatives of the Royal Colleges of Physicians and Surgeons. In a recent lecture before the Institute of Hygiene, Dr. J. BRIGHT BANISTER stated that 42 per cent. of gynæcological out-patients ascribe their condition directly or indirectly to childbirth. The question arises whether the majority of these troubles could have been prevented. The further development of the Woolwich Training School will help to answer this question, as we believe, in the affirmative. No case of septic infection occurred during last year among the 202 confinements in the hospital. 281 women were delivered in the district, among whom there was no case of serious illness. The new scheme trebles the available beds, but it is much to be hoped that a further £10,000 may soon be forthcoming to build and equip the nurses' home and to set free the antenatal department entirely for its proper use. We trust that the QUEEN'S visit may afford the needed stimulus.

THE British Medical Association is calling a Conference of Medical Representatives of the honorary medical staffs of voluntary hospitals to be held in the Wigmore Hall, 36, Wigmore-street, London, W. 1, on Wednesday, March 22nd, at 11 A.M., under the chairmanship of Sir James Galloway, to discuss the report of the Council of the Association on hospital policy. This is the report on which we commented last week in a leading article.

Annotations.

"Ne quid nimis."

VOCATIONAL SELECTION.

INDUSTRY has great need for guidance with regard to vocational selection, and is coming more and more to appreciate this need. Dr. C. S. Myers stated last week at the first annual meeting of the National Institute of Industrial Psychology that employees are as yet more sympathetic than employers to the claims of industrial research. Nevertheless, it is clear that greater productivity ensues for the employer, and greater contentment and wages for the operative if he is well suited for what he has to do. The Industrial Fatigue Research Board has been investigating the subject, recognising that work is performed with greater ease and less fatigue when a man and his work are well mated. Three studies are now published[1] in the form of a report, the major part of which deals with an inquiry conducted by Mr. B. Muscio among compositors. Much ingenuity and skill was displayed in devising certain tests, performance of which is admittedly intended to imitate various processes actually performed by compositors. The success achieved is measured by comparing the efforts of compositors to perform these tests with the opinion held by their foremen as to their skill as craftsmen. So far a high measure of success is recorded; but at best Mr. Muscio only appears to have found out, by using his tests, which were the better workers; this information could surely have been obtained by asking a few questions and without applying any tests. The expectation that a new-comer who possesses innate capacity for type composition can be discovered by his skill at performing these tests may be likened to an attempt to select a University crew from the performances of freshmen in a tub-pair! The tests might be of value when engaging a skilled craftsman; but probably his testimonials would be of more value. This important subject can be pursued on more useful lines, for Mr. Muscio himself in the second study has turned to establishing certain fundamental physical differences between two groups of youths, one coming from Essex and the other from Manchester. The two groups differed markedly in height, weight, and muscular power. The advantage lay with the Essex group, and approximated to 2½ in. in height, 10 lb. in weight, and 4½ kilogrammes in strength of grip. The result of the inquiry is to throw doubt upon the value of the Martin strength test which has been recently much used in the United States; and to establish that either weight or grip alone give a useful and practical measure of physical capacity. The Smedley dynamometer was used to test strength of grip. Given a grading of occupations and processes according to their need for physical strength, the capacity of applicants for work can be readily tested in this way, and candidates can be sorted out. Other requirements for occupations, whether physical, physiological, or mental, require to be similarly investigated in order to evolve equally simple tests. Then occupations and applicants could be re-grouped for each requirement. In this way the combination of natural characteristics possessed by any applicant could be rapidly ascertained along with the work for which he is naturally fitted.

The third study reported upon by Mr. E. Farmer applies the principles here advocated to definite industrial processes. He proceeded by taking various measurements of the hands of workers employed in sweet factories. After excluding measurements which showed no relation to the processes investigated—i.e., those of the packing and the packet and dipping departments—he found two distinct types, the long spanned and the short spanned. A tendency was found for the best packers to belong to the long spanned type, but for the best dippers to belong to the short spanned type. The conclusion is drawn that physical type, related to the work in question, plays a part in proficiency; but that there are also other powerful factors, such as psychological qualities, which may in some cases so far over-ride physical capacity as to enable a worker with no physical advantages to become proficient. Nevertheless, sight should not be lost of the fact that physical capacity is fundamental, and must be present before psychological qualities can be brought into play. Note should also be made that the physiological make-up of the worker—i.e., the way in which the physical machine acts—should be observed before inquiries are pursued into the more abstract realms of psychology. We are not clear whether the physical qualities found may not have resulted from practice; or whether they were the result of selection brought about either by the management excluding the poorer workers, or by these workers on their own account turning to a process for which they are better fitted. These preliminary results suggest further scientific guidance in vocational selection.

[1] Three Studies in Vocational Selection. The Industrial Fatigue Research Board. Report No. 16. 1922. Pp. 86. H.M. Stationery Office. 1*s.* 6*d.*

THE AMYOSTATIC SYNDROME AS A LATE MANIFESTATION OF ENCEPHALITIS.

Parkinsonian symptoms as sequelæ of cases of acute epidemic encephalitis have apparently not attracted as much attention in this country as on the continent, although in an article, which we publish this week, Prof. A. J. Hall mentions cases of partial recovery owing to persistence of the Parkinsonian reflex in varying severity. The symptoms have also been described by Farquhar Buzzard and S. A. K. Wilson, but there seems to have been little attempt to coördinate them to the general pathology of the disease, except by Prof. Economo, of Trieste. In the first number (November, 1921) of a new Italian periodical, *Minerva Medica*, published at Turin, Prof. A. Ceconi contributes an elaborate and illuminating paper on the subject. The clinical picture of the disease, in relation to the multiplicity of the lesions of nerve tissue, is so rich in symptoms and so protean in their grouping, that its pathogenesis has remained hitherto somewhat unprecise. Certain facts, however, stand out—for instance, the mask-like expression due to paresis of the facial nerve is not accompanied by any trace of reaction of degeneration or of atrophy, and, therefore, the lesion must reside elsewhere than in the bulbar nuclei. Again, the ocular paresis, which is present in conjunction with vertigo, muscular asthenia, and diminished reflexes, may be interpreted as the result of damage to Deiter's nucleus or the fibres which connect it with the cerebellum and mesencephalic nuclei. Prof. Ceconi draws attention to the frequency of very chronic cases in which the initial acute symptoms pass off more or less completely; the patients have perhaps been thought recovered, but gradually develop the Parkinsonian syndrome; so much so that Ceconi is sceptical of the complete cure of the disease. He remarks that even in the acute stage of the affection, of whatever form or gravity, two symptoms are almost always present, amyosthenia and muscular rigidity; these may escape observation, being lost in the remaining symptomatology or being considered of minor importance. But the importance of these two symptoms comes to light later on when, the acute stage having passed and the prominent symptoms being modified, so that the patient is considered on the road to recovery, it is noticed that these same symptoms are still present, and are more evident because they are isolated and perhaps also because they are more accentuated than they were at the beginning. And their importance becomes very striking when, after a certain time, they are observed still to persist and to be gradually increasing; then it is realised that the disease, instead of being cured, survives in these two manifestations which represent the dominant chronicity. When developed the syndrome consists of a more or less generalised hypertonia of the muscles with tendency to immobility and contracture, with tremors

and adiadochokinesis, normal deep and superficial reflexes, and general amyosthenia. It is evident that these symptoms must have an extra-pyramidal origin, and are distinct from diseases having a similar syndrome—for example, Wilson's disease, in which there is a hepatic lesion, the pseudo-sclerosis of Strümpell, the Oppenheim-Vogt disease, with its characteristic lordosis, and Homèn's disease, with its psychic changes.

In the present state of our knowledge the post-encephalitic symptomatology, as far as concerns the amyostatic syndrome, must be considered the result of a lesion of the basic nuclei, more especially the lenticular and of the motor tracts in relation to it. The lesion being frequently bilateral has a corresponding bilateral symptomatology, as is seen in Wilson's disease and in pseudo-sclerosis, but cases with unilateral or nearly unilateral symptoms are sometimes met with. One point remains somewhat obscure in the course of the malady. There is evidently an inflammatory localisation as anatomical substratum, and the lesion being primary there is no reason for admitting the action of hepatic toxins which have been called to help in the interpretation of Wilson's disease and pseudo-sclerosis. Cure must be brought about by autolysis and absorption of the exudate material, with rapid or gradual disappearance of all the symptoms. This is what actually happens in a small number of cases; in others the disease is gradually reduced to a minimum of symptoms. But these fortunate results are not frequent; more often, as Prof. Ceconi shows in his cases, when the first acute stage is passed the disease runs a chronic course, progressive in its characteristic motor symptoms, so as to render the physical condition of the patients very precarious. In other cases, still more frequent, after the acute stage, a period of relative well-being ensues which may be prolonged for several months, during which the patients are believed cured, although the amyosthenia, and especially the mask-like expression, are always in evidence even if little pronounced. The symptoms then at a certain moment resume their interrupted course, and eventually develop as in the preceding cases. The reason for this apparent arrest and recurrence is obscure. It may be that, during the acute period, not all the nerve fibres which traverse the area involved in the inflammatory process are cut off, nor all the cellular elements involved, but that some of each preserve their integrity and function. Nor must the possibility of the process diffusing itself by successive "*poussées*" be forgotten. This hypothesis seems justified by some recent histological researches of Economo in a subject who died four months after apparent cure, in whom there was shown to exist infiltration into the grey matter from the basal ganglia to the bulb as extensive and abundant as is observed during the acute stage.

GERMAN EXPERIENCE IN CURING CANCER.

STATISTICS collected from several of the large German hospitals[1] reveal the extremely unsatisfactory results of operation on malignant growth, even when removal has been extensive. Thus carcinoma of the stomach was cured in only 15 to 25 per cent. of the operated cases; carcinoma of the breast in 40 per cent., and of the thyroid gland in 10 per cent. Among 37 cases of carcinoma of the tongue, only three were found free from recurrence after three years. The figures for rectal carcinoma are rather variable, 40 per cent. of cures being given from one clinic, while from another, out of 170 patients all operated upon, 39 per cent. lived more than one year, 15 per cent. more than two years, 10 per cent. more than three years, 4 per cent. more than four years, and only one patient lived more than five; 20 per cent. of cures were obtained in carcinoma of the cervix uteri. An attempt is made to compare these results with those obtained by X ray and radium treatment, but the figures are necessarily rather difficult to obtain, as in many cases treatment was combined with operation. Of 58 cases of columnar-celled carcinoma of the cervix treated by X rays, in most cases combined with radium, a complete cure—freedom from recurrence after five years—was recorded in 20 per cent., a percentage similar to that given for operative results. By a combination of operative and rontgen therapy, the figure of 31 per cent. was reached. From the Freiburger Klinik, absolute cure of cancer of the body of the uterus, after the combined treatment, was reported as 53 per cent. and from the Leipziger Frauenklinik 75 per cent. Disappointment was caused by X ray treatment of carcinoma of the rectum, owing to the tenesmus and pain often produced, and repeated doses were found adversely to affect the general condition of the patient. On the other hand, in carcinoma of the skin, including rodent ulcer, complete cure was obtained in 70 to 90 per cent. After experiments on malignant disease of the mouth, lips, fauces, and pharynx, the general opinion was formed that operation should be undertaken wherever possible, and only those cases that are entirely inoperable should be submitted to the X rays. Early carcinoma of the breast was said by Krönig to be amenable to X rays to the extent of 40 to 60 per cent., but Sauerbruch doubts the accuracy of these figures. According to the statistics of the Freiburger Klinik only 14 per cent. of the operable cases were cured by X rays.

Sauerbruch points out that before the value of any method can be rightly estimated, the following questions must be cleared up: (1) Does spontaneous healing of malignant growths take place? (2) How is such spontaneous healing produced? (3) How can the natural processes be increased by artificial means? He quotes a number of cases, microscopically proved to be malignant, in which spontaneous healing occurred. In the majority, spontaneous cure took place after an acute infective process had attacked the tumour. Exanthemata were responsible for a few, and in two cases severe bleeding was followed by cure. One or two healed independently of adverse affections. Sauerbruch believes that spontaneous healing takes place more often than is usually believed. One of his own cases was a woman of 56 years, who was brought into the hospital in a deplorable state, suffering from a large ulcerating carcinoma of the breast. The foul sloughing surface was scraped, and the intense pain relieved by large doses of morphia. A comatose condition resulted, which lasted eight to ten days, during which all food was refused. Suddenly the condition changed, and improvement rapidly took place, both in the local and general condition. She took food, put on weight, and left the hospital in six to seven weeks' time, the wound having become covered with epithelium and the tumour having almost entirely disappeared. Unfortunately, the case was lost sight of owing to the outbreak of the war. A second case of spindle-celled sarcoma of the fascia of the thigh was first treated with X rays, with the result that the tumour increased in size. An attempt was then made to remove the tumour, but it was found to extend into the pelvis, and a large portion of it had to be left behind. Thrombosis subsequently developed and led to gangrene of the leg. Large doses of morphia and scopolamine were necessary to combat the pain. After going downhill for 14 days the patient suddenly rallied, the tumour dwindled, and the patient put on weight and recovered. The gangrenous leg was amputated, and seven months later the patient was in excellent health and the tumour had entirely disappeared. It has been shown that in these cases of spontaneous recovery the tumour cells become shut off and eventually strangulated by newly-formed fibrous tissue. Sauerbruch suggests that through a study of the process of spontaneous healing we should arrive at some means whereby we can stimulate the normal tissue to activity. Rontgen rays of various lengths and strengths might have the desired effect, and the resistance of the patient might also be increased

[1] F. Sauerbruch and Dr. M. Lebsche: Deutsche medizinische Wochenschrift, Jan. 19th and 26th and Feb. 2nd, 1922.

by their application to the whole surface of the body. Bier's treatment with protein bodies should also be further investigated, and the effect of blood-letting, alterations in diet, and other means of influencing the general condition. Sauerbruch concludes: "Who knows but that we shall not soon learn how to stimulate and artificially assist the processes which cause spontaneous cure in malignant growths? I am convinced that the X rays will play a large part in this work, but the improvement will take place not in the increase of their physical effect but rather in their power of adaptation to the particular purpose and the particular kind of tumour to be dealt with. For the present, however, while the action of X rays are so uncertain early diagnosis and early operation remain for the surgeon the only available hope of cure."

VOLUNTARY TREATMENT IN MENTAL HOSPITALS.

IN the annual reports for 1921 of the physicians superintendent of the Royal Edinburgh Hospital, Morningside, and of the Crichton Royal Mental Hospital, Dumfries, particular attention is paid to the system of voluntary treatment and the great need of its extension to include treatment of early and mild cases of mental illness among the rate-aided class of the community. Writing of the Morningside Hospital, Dr. G. M. Robertson states that the voluntary proportion of 50 per cent. of all admissions to Craig House has now remained steady during three years: accepting this fact as an indication of the trend of public feeling, he concludes, first, that the public do not consider certification desirable or necessary for one half of the patients who need treatment in mental hospitals, and secondly, that this same proportion of patients have, in the early stage of their disease at least, some insight into their own condition, and are, at any rate, susceptible to argument concerning it. At the Dumfries mental hospital there were 127 voluntary and 182 certificated entries. "The voluntaries," writes Dr. C. C. Easterbrook, "suffered from the same kinds of nervous and mental illnesses as the certificated patients, but mostly in earlier stages or milder degrees." The earlier the treatment, the more hope is there of recovery, and to quote Dr. Robertson's words:—

"Voluntary admission encourages earlier treatment of mental disorders than a procedure in which one has to wait till the illness has reached a stage at which the patient may be legally certified to be insane. . . . Again, nothing is more conducive to the efficient administration of a mental hospital than the presence there of large numbers of voluntary patients. Their views and criticisms cannot possibly be ignored, as those might conceivably be of persons who are very insane, especially as voluntary patients possess the right of leaving an institution on giving three days' notice of their intention to do so, if dissatisfied with their treatment."

The practice of voluntary treatment is so generally admitted to be admirable that its extension to include cases of persons unable to pay for such treatment becomes a matter of common justice. At present the poor are debarred from this great advantage because the Government gives a grant-in-aid to parish councils for the maintenance of certified lunatics, but nothing for the upkeep of voluntary patients. Thus, to obtain treatment for mental disease, however mild, a poor patient must undergo a judicial process, be certified as a lunatic, and then be legally committed under an order of detention granted by a sheriff or magistrate. This system of compulsory pauperisation and certification is, in Dr. Easterbrook's opinion, largely responsible for the frequent unwillingness of relatives to send the patient to a mental hospital until it becomes absolutely necessary to do so. The procedure, he suggests, should be on lines similar to, but not identical with, those followed in the case of the private voluntary patient. Formal application should be made, as at present, to one of the Commissioners or simply to the General Board of Control, but it should be supported by the recommendation of the patient's usual medical attendant, and in a rate-aided case, countersigned by the clerk to the district board of control, or other appropriate public official accepting financial responsibility for the case. The sanction of the Board should be received by the patient before his admission, and should contain an instruction to the patient to the effect that he can leave the hospital on giving the superintendent reasonable notice. A period of seven days is suggested in this connexion, instead of the present period of three days, which is considered too short. Further, with reference to the mental condition of a person eligible for admission as a voluntary patient, the writers of both reports fall foul of the ambiguous phrasing of the Scottish Statute of 1886, wherein the voluntary patient is required to be "any person who is desirous of submitting himself to treatment, but whose mental condition is not such as to render it legal to grant certificates of insanity in his case." Dr. Easterbrook points out that a better definition would be "any person who is desirous of submitting himself to treatment," with no debatable clause referring to certification. The patient's own willingness to come, and his doctor's recommendation, should suffice to gain his admission.

THE EFFECT OF COPPER ON VITAMIN C.

IT is known that the antiscorbutic vitamin in milk, orange-juice or tomato-juice, is, to a certain extent, destroyed by oxidation. A. F. Hess and L. J. Unger, in view of the well-known action of catalysts in increasing oxidative processes, and the frequent presence of traces of copper in milk, have made experiments to ascertain the effect of the addition of small amounts of copper to milk.[1] To this end two groups of guinea-pigs were fed with equal amounts of milk which in the one instance had been heated in a glass vessel to 60° C. for 40 minutes, and in the other instance had been heated in a copper vessel to the same degrees. Each animal received daily dried milk to the equivalent of 100 c.cm. of fluid milk, and oats in addition. None of the guinea-pigs fed on the milk heated in the glass vessel developed scurvy during a period of four months; they did not, however, make normal gains in weight as the quota of antiscorbutic vitamin was inadequate. On the other hand, the animals fed with the same quantity of milk which had been heated in a copper vessel all developed scurvy, and died after about four weeks. This milk contained 1·4 parts of copper per million. That this nutritional failure was due to a lack of antiscorbutic vitamin was demonstrated by the excellent gains of a third group of guinea-pigs which were given milk heated in the copper vessel, but received in addition 2 c.cm. daily of orange-juice. Milk frequently becomes contaminated with copper in the course of commercial pasteurisation or condensation. The authors remark that it seems possible that these traces of copper may contribute to the destruction of the antiscorbutic vitamin and account, in some degree, for the varying content of this factor in heated milk. It is also possible that the copper ingested with the food, especially in infants whose diet consists mainly of milk, may exert an effect within the animal body.

TRACHOMA AND OPHTHALMIA IN EGYPT.

ACCORDING to the report of the Ophthalmological Society of Egypt on the means of prophylaxis against trachoma and ophthalmia, it is no exaggeration to say that about 90 per cent. of the whole population of Egypt are infected with trachoma, while the proportion of those blind in both eyes to the total population is 1 in 82, mostly from the infection of acute ophthalmia. The most disquieting fact that appears from the report is that in spite of the existence of 18 ophthalmic hospitals with a staff of 32 ophthalmic surgeons, there was no appreciable amelioration in the condition of affairs during the decade 1907–1917. We do not believe

[1] Proc. Soc. for Expt. Biol. and Med., xix., December, 1921

that there is here any just ground of complaint against the Egyptian doctors, for the spread of infection is beyond their control. The modes of infection are, the report says, (1) by the hands of persons infected, (2) by linen used in common, (3) by wash-basins used in common, and (4) by flies; and it is obvious that the hygienic measures requisite to prevent these various ways in which infection is spread can only be attained by such a system of generalised education in hygiene as would make the people themselves capable of intelligently coöperating with the authorities. We therefore consider that the most important recommendation contained in the report is the establishment of universal elementary education for girls and boys, on the assumption that, at any rate, all teachers are well armed with the principles of general and especially ophthalmic hygiene. With regard to the Government primary schools already established, the committee recommend that the Ministry of Education should be advised to appoint an adequate number of school medical officers who have previously had a short period of training in ophthalmology. This, however, we learn, has for long been an accomplished fact, the system of medical inspection under the Ministry of Education having been in force ever since the year 1864. In all kinds of schools and colleges conducted by the Ministry the pupils and students are examined for diseases of the eye on entering and at least once during each succeeding school year. A medical officer formally visits each day-school once a week and sees pupils, and each boarding school is visited daily by the school medical officer, so that, so far as medical inspection goes, it does not seem likely that any great improvement would result from an increased outlay in this direction. What is wanted is rather a crusade to attack the spread of infection in the homes of the people, and for this we would urge coöperation between the Government and the medical profession, so that in time those measures of personal hygiene which are the only reliable prophylactic may be understood and carried out by the people themselves.

THE VITALITY OF THE PEOPLES OF AMERICA.

THE American republic represents the greatest experiment in human mixings in the world's history, and until recently nearly all the races of mankind have participated in this experiment, without let or hindrance. This fact lends special interest to a lengthy review of American vital statistics by Dr. R. Pearl, which recently appeared in the *American Journal of Hygiene*. The forecast is given in this paper that the time is not far away when the pressure of population on means of subsistence in the United States will be definitely felt, and that in less than two centuries this pressure will be so great as to make the everyday life of everybody an entirely different thing from the prodigally wasteful business it now is. The forecast may be correct in respect of prodigal expenditure; but that the States will have an excessive density of population is doubtful. It may be found that, as in France at the present time, and as probably in England ere long, the Malthusian fear will be replaced by efforts towards increasing a failing population. In America already the older stocks have a birth-rate which is nearly as low as in France and in the parts of England whose birth-rate is exceptionally low. The increase of Roman Catholics and Jews, and of the Slavonic element in the American population is still very rapid; and there is a steady stream of immigrants who have not yet acquired the habit of a restricted birth-rate. But is this likely to continue more than a couple of generations? Is it not probable, on the contrary, that the "small family system" will become more nearly universal as time progresses?

Facts are adduced showing the reality of race fusion in the States, and showing also that the comparatively large, well-settled, foreign-born population reproduces at a relatively much more rapid rate, both when pure and when fused with American stock, han does the strictly American-born stock by itself. For instance, in the three States of Massachusetts, New York, and Connecticut in 1919 there were more matings, and still larger additions to the population, by the foreign-born than by the native-born. It is a striking fact that the first biological result of Americanisation is to reduce the fertility of the marriages. Although the main conclusions as to fertility may be accepted, it would appear that too little account is taken of the defects of birth-registration in many States, and this comment applies particularly to the observations on stillbirths, which in the legislation of some States are not defined. Dr. Pearl attaches much importance to the measure of the condition of a population constituted by the ratio of births to deaths within a given time, for which he suggests the term "vital index." He points out that no other statistical constant gives so adequate a picture of the net biological status of a population, adding, "it is curious, in view of the obvious significance of this constant, the vital index of a population, that so little attention is paid to it by demographers." It is, however, a misapprehension to think that the index of vitality constituted by the balance between births and deaths is not in regular use. Each year the rate of natural increase forms the subject of a special section of the annual report of the English Registrar-General of Births and Deaths; and in their annual reports some hundreds of medical officers of health draw attention to the balance, if any—in this country still very considerable—of birth-rate over death-rate in their respective districts, which is generally known as the rate of natural increase. This rate of natural increase is $(a-b)$, while the "vital index"—a name which is far from being self-explanatory—is $\frac{a}{b}$.

Although the rate of natural increase may on a first analysis give a measure of the relative biological efficiency of two populations, it is an unsatisfactory measure, and this for a reason which does not appear to be appreciated in Dr. Pearl's paper. It is a ratio between two variables; and may have a completely different significance according to which variable is excessive or defective. Thus the lower rate of natural increase of negroes is due to the fact that their excessive death-rate more than counterbalances the effect of the high birth-rate in the negro population. But to assert that by nature the negro is biologically fitted only to be an agricultural labourer and that to the extent to which he submits himself to the conditions of town life he tends towards extinction, is to suggest the existence of inevitable and intrinsic circumstances which are bound to continue. True, as Dr. Pearl says, "the important things are the facts as they are"; but they have an additional importance due to the circumstance that when adequately studied these facts point the way to reforms, sanitary, social, educational, which will make "the facts as they are" very different from the present state. There can be no greater public disservice done by statistics than to suggest the fatalistic character of present evils, while failing to point out the possibilities of neglected reforms.

TREATMENT OF SCOLIOSIS BY REMEDIAL EXERCISES.

AN interesting feature of a discussion which took place at the recently formed Section of Orthopædics at the Royal Society of Medicine was the general discontent with the treatment of scoliosis in cases which present definite bony deformity. Too often these cases are handed over to a gymnast—usually with little or no definite instruction as to what is needed or expected. Yet, as the discussion showed, few, if any, of the initiated have the smallest faith in the power of the gymnast to alter the bony deformity or to confer any material benefit, beyond the restoration of some degree of lost mobility. For scoliosis in which no bony defect is present the value of physical drill in the educational system, as well as of games and sport generally, was emphasised. In Sweden, where

physical treatment is more fully recognised than in this country, the number of cases of marked scoliosis is comparatively rare and severe cases still rarer. It is impossible to judge as yet whether this is the triumph and vindication of preventive treatment or not, but the presumption is that we, in this country, lag behind. This is not due to lack of effort, but the discussion showed that much of this effort is misdirected. At the conclusion of the discussion it was proposed, from the chair, that the Council of the Society of Massage and Medical Gymnastics be approached to form a committee to discuss the whole subject with representative medical men. This conference will be charged to estimate what is good and what is bad in our present management of these cases; what physical treatment can accomplish as a curative, palliative, or preventive agency; how much of the training of the medical gymnast is faulty, both from the view of excess and omission; and what can be done to secure better coöperation between medical men and the gymnasts to whom they depute their treatment. It is to be hoped that representatives of the Ling Association may also be invited to join in this conference, which, if successful, should prove of high value.

KING EDWARD VII. SANATORIUM, MIDHURST.

THIS sanatorium was founded by H.M. King Edward VII. in 1903, with funds provided by the late Sir Ernest Cassel, part of which were reserved for endowment. It was built expressly for educated persons of limited means who are suffering from pulmonary tuberculosis in an early stage. The Council, we are informed, believe that there are many individuals in the above class who do not avail themselves of the benefits of the institution, because their medical advisers are not aware of the unique advantages which it presents; and it is felt to be very desirable to enlist the coöperation of such practitioners, whose knowledge of their patients will enable them to select the persons socially as well as physically suitable for admission. The advantages of site, environment, building, and equipment of the sanatorium, which is placed in one of the loveliest parts of Sussex, are probably well known to our readers. The medical attendance and nursing organisation is thorough and efficient for an establishment of 104 beds. It consists of a medical superintendent, two assistant medical officers, a pathologist, and a visiting dental surgeon, while the institution is supervised by a consulting staff of London physicians, who visit it with regularity. Our readers should also note that a report of the condition of each patient on admission and on discharge is sent to the medical man concerned in the case, who also receives the annual report of the work of the institution. The inclusive charge for maintenance and treatment is at present 4½ guineas weekly. Application for admission should be made to the Medical Superintendent, King Edward VII. Sanatorium, Midhurst, Sussex, who will forward all particulars.

THE WASSERMANN TEST IN GENERAL PRACTICE.

To what extent are modern laboratory tests made use of in general practice? Much depends on the scientific keenness of the practitioner. We imagine that in almost every case of suspected phthisis a specimen of sputum is subjected to a bacteriological examination, either by the practitioner himself or in some laboratory. But with that exception it is questionable if full use is made of laboratory facilities. The statistical returns made by public laboratories up and down the country do not, for instance, suggest that the general practitioner sends many specimens to be examined either for the gonococcus or the spironema of syphilis. It may be, of course, that, with centralisation of treatment in the free venereal clinics, the general practitioner is seeing less and less of these diseases, and therefore does not need laboratory aid for their diagnosis. But he must come across many cases of obscure disease in which an examination of the blood by the Wassermann test would be of assistance in helping him to a diagnosis. While it cannot be too often emphasised that a positive result from the Wassermann test does not necessarily mean that the immediate affection from which a patient is suffering must be syphilitic—the result of the test must be weighed carefully along with all the clinical symptoms and the details of the patient's history—nevertheless the result of the Wassermann test may be the determining factor in leading the practitioner to a correct conclusion.

These remarks are suggested by an interesting article in the January number of the *Edinburgh Medical Journal* by Dr. Arthur Mills, of Dundee, on the Wassermann Test in General Practice. Dr. Mills points out a fact that is daily becoming more and more appreciated by all hospital surgeons—viz., that a child may be suffering from hereditary syphilis without exhibiting any of the classical stigmata of that disease. He further shows that inherited syphilis may manifest itself in a variety of conditions which have not been hitherto recognised as depending upon hereditary infection, but which yield rapidly to antiluetic treatment. From his experience in general practice, where he seems wisely to have lost no opportunity of having the blood of his patients subjected to the Wassermann test whenever he deemed it necessary, he has gathered a valuable collection of suggestive facts. His observations indicate that all family physicians would be well advised to make frequent use of the serological examination. Its result may prove as valuable an aid to them as it has to him, and enable them to decide upon a correct line of treatment in cases where, but for the laboratory test, the precise diagnosis would have been uncertain. The perusal of Dr. Mills's article will repay all practitioners, and be of profit to more than one specialist.

HOLES IN THE MACULA.

THE condition known as "hole in the macula" is one of the rarer results of a blow on the eye. Occasionally it is found in the course of disease; F. A. Williamson-Noble,[1] making a pathological examination of an eye excised for absolute glaucoma secondary to thrombosis of the central vein, has found this condition. A cyst had been formed at the macula between retina and choroid and the retinal layers overlying this cyst had completely atrophied. The condition was attributed to a toxic influence acting on the macular choroidal capillaries and causing œdema. Then, according to Williamson-Noble, the fluid diffuses into the potential space between the rods and cones and the pigment epithelium, preventing the access of nutrient materials from the chorio-capillaris, so that the superjacent retina degenerates and forms a hole. Can traumatic cases be similarly explained? According to Menteith Ogilvie, who made a collection of these cases in 1900,[2] the injury is the result of "contrecoup," the waves of force initiated by the blow on the front of the eye meeting at the posterior pole. Williamson-Noble suggests that the effect of this may be to cause œdema, with cyst formation and the appearance of a hole just as in non-traumatic cases. A unique case is reported from China by T. M. Li, of Pekin,[3] in which not one but both eyes were similarly affected. The patient was a soldier of 22 and received the injury when playing football, being struck fairly in the face by the ball and made unconscious for about ten minutes. Typical holes in each macula were found, with poor vision and relative central scotomata. The condition subsequently improved. The ophthalmoscopic picture of these cases is very striking and is well represented in the papers already quoted by Ogilvie and Li. Its distinguishing feature is a round or oval area at the macula, cherry-red in colour, as in cases of simple retinal œdema, but, unlike these, sharply defined and on a deeper level than the adjoining fundus.

[1] British Journal of Ophthalmology, February, 1922.
[2] Trans. Oph. Society, vol. xx.
[3] American Journal of Ophthalmology, January, 1922.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

AT an Executive Committee held on Feb. 27th a number of important matters were presented.

Reappointment of Members.—Official notification was read of the reappointment of the following members of the Council: Sir Edward Coey Bigger, M.D., as Crown nominee for Ireland for five years from Jan. 24th, 1922; Sir Arthur Chance, F.R.C.S.I., as representative of the Royal College of Surgeons in Ireland for one year from Feb. 1st, 1922; Dr. Benjamin Bloomfield Connolly, as representative of the Society of Apothecaries of London for one year from Dec. 10th, 1921; Dr. Thomas Wardrop Griffith, as representative of the University of Leeds for three years from Jan. 1st, 1922; Dr. Matthew Hay, as representative of the University of Aberdeen for five years from Dec. 13th, 1921; Dr. John Yule Mackay, as representative of the University of St. Andrews for five years from Jan. 7th, 1922; Sir Sidney Russell-Wells, M.D., as representative of the University of London for one year from Feb. 24th, 1922; Mr. Holburt J. Waring, F.R.C.S., as representative of the Royal College of Surgeons of England for five years from March 8th, 1922; Mr. Thomas Sinclair, F.R.C.S., as representative of the Queen's University of Belfast, for three years from April 16th, 1922.

Restoration of Names to the Register.—The Registrar reported that the names of the undermentioned practitioners had been restored to the Medical Register, from which they had been erased on account of failure to communicate their addresses to the Registrar:—

Alfred Arthur, Charles K. Bond, Henry W. Case, William W. Clemesha, C.I.E., Philip L. Davies, Charles W. S. Davies-Colley, Henry Duguid, Percy B. Harrison, John D. Henderson, Percival M. Keane, Francis L. Moore, Henry N. Oglesby, Michael J. Pierce, Akkey B. Platt, Clifford G. J. Raynes, Leonard G. Reynolds, William Reynolds, Ernest D. Richardson, Dawson C. Robertson, Richard A. Ross, William D. Sammon, Jessie A. Scott, John Shaw, Ernest Shelton-Jones, Richard F. Shepherd, Graham Smith, Thomas Somerville, David J. Thomas, Charles Tighe, Enid M. Walters, Tom Waterhouse, James Westlake, William G. Weston, James Williamson, Edwin E. Willis.

Reciprocity with Spain.—A communication was considered from the Privy Council, transmitting a despatch from H.M. Ambassador at Madrid in regard to reciprocity. The Ambassador asked whether he should approach the Spanish Government with a view to obtaining their consent to the meeting of an international technical commission prior to the submitting of the Draft Bill to Cortes (presumably during the coming session) which could discuss on what grounds reciprocity may be established between the two countries. Such a commission appeared to the President to be unnecessary, and the Committee approved this view.

Reciprocity with Belgium.—The President reported that the Belgian Academy of Medicine had been invited by the Belgian Government to give its considered views on the question of the renewal of the agreement.

Amendment of South Australian Act.—A communication was read from the Colonial Office, trasmitting a copy of an Act, dated Dec. 7th, 1921, to amend the Medical Practitioners Act, 1919, of South Australia. The Act prescribes that no registration fee shall be payable by a person already registered in a country forming part of H.M. Dominions if there are reciprocal arrangements; and that where under sections 35 or 36 of the Act a practitioner is advertised, he should be convicted, unless he proves to the satisfaction of the court that he had not authorised and was not responsible for the advertisement.

Indian Universities and Midwifery.—A communication, dated Nov. 4th, 1921, was read from the University of Madras, stating that the recommendations of the Faculty of Medicine for the amendment of the medical regulations so as to meet the requirements of the Council in regard to the teaching of midwifery, with a slight modification, had been adopted by the Senate. The relevant clause in the new regulations runs as follows:—

> Every candidate for the M.B. and B.S. or L.M. and S. Degree shall be required to present a certificate bearing that he has conducted 20 cases of labour under official medical supervision subject to the following conditions, viz., either
>
> "(*a*) That he has previously given regular attendance for a period of three months upon the indoor practice of a lying-in hospital or the lying-in wards of a general hospital, and has received practical instruction therein under the supervision of a medical officer, *or*
>
> "(*b*) That he has previously given regular daily attendance for a period of one month upon the indoor practice of a lying-in hospital or the lying-in wards of a general hospital, and that he has conducted cases of labour therein, and has been certified by the instructor as competent to conduct outdoor cases under official medical supervision."

The Registrar reported the receipt of a communication on the same subject from the University of Bombay. The President informed the Committee that Dr. Norman Walker was now in India, accompanied by a high official of the Indian Medical Service nominated by the Government of India, and would report to the Council on the subject of facilities for instruction in midwifery in India on his return. Consideration of these communications was postponed.

University of London: Degree of B.D.S.—A communication, dated Jan. 4th, 1922, had been received from the University of London stating that His Majesty in Council had approved an amendment in the statutes enabling the University to grant the degree of Bachelor in Dental Surgery for internal students, and that the regulations were approved by the Senate on Dec. 14th, 1921. The institution of the degree was recorded for registration.

College of Physicians and Surgeons of Ontario.—The Committee considered a communication, dated Nov. 28th, 1921, stating that Edmund Arthur Hay Roe, whose name was entered in the Colonial List of the Medical Register on March 31st, 1920, with the qualification M.C.P. and S. Alt., 1919, had applied to the College for registration in virtue of his registration in the United Kingdom, and it had been discovered that he was admitted to examination in the Province of Alberta in virtue of professional studies in the College of Osteopathic Physicians and Surgeons, Los Angeles, California, in the year 1912, and had received the degree in osteopathy after a course of study of four years. The College drew attention to what it considered to be an irregularity, and by direction of the President a letter asking for an explanation was sent to the College of Physicians and Surgeons of Alberta on Dec. 15th, 1921, to which no answer had yet been received.

Correction of the Medical Register.—The Registrar reported that the systematic correction of the Register had been continued, and circulars of inquiry were sent last year to all practitioners from the letter "P" to the end of the Register, including all of those on the Colonial and Foreign Lists. A very large number of corrections were received, and many practitioners whose addresses had been lost were traced by means of the careful search that was made in all the books of reference that were at the Registrar's disposal, by means of advertisements in *The Lancet* and *British Medical Journal*, and by assistance which was generously given by the British Medical Association from its records. As a result of this revision and of individual inquiries made during the year, the names of 510 practitioners had to be removed under the provisions of section 14. This year, circulars were being issued to all practitioners from the letter "A" to the end of "G."

ON the nomination of the Privy Council, Sir Nestor Isidore Tirard, M.D., F.R.C.P., has been appointed for five years a member of the General Medical Council in the place of Mr. Norman Godfrey Bennett, M.B., B.Ch., L.D.S., retired.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A SPECIAL meeting of the President and General Council of King Edward's Hospital Fund for London was held at the House of Lords on March 8th, Lord DONOUGHMORE, member of the President's Powers Committee, being in the chair.

After a letter from Lord STAMFORDHAM had been read, expressing the gratification of the King and Queen on the receipt of a message of congratulation from the Council of the Fund on the occasion of the betrothal of Princess Mary, Lord SOMERLEYTON moved the adoption of recommendations by the Management Committee on the London Hospitals Contributory Scheme. These stated that the objects of the scheme were to enable wage-earners by means of an organised system of moderate and continuous contributions (1) to give voluntary assistance to the hospitals of London in carrying on their work, and (2) to relieve wage-earners and their dependants from hospital charges when receiving hospital services.

Need and Scope of the Scheme.

The need is sufficiently expressed in the common knowledge that the expenditure of the hospitals has grown enormously. They continued: It is not intended that hospitals should afford any facilities other than those already provided by them, or that any alteration should be made in the arrangements now in in force at individual hospitals for the admission of persons as in-patients or out-patients, or for their treatment by the medical staffs; the hospital will continue to decide what cases are suitable for hospital treatment, and the order of priority in which applicants are to be admitted. The scheme has nothing to do with National Health Insurance, and leaves untouched the position and responsibility of the general practitioner; it does not cover ordinary maternity cases or any treatment for which provision is made by the State or local authorities.

In order to avoid abuse an income limit has been fixed confining benefits under the scheme to those persons whose individual income does not exceed £4 a week for a single man or woman, £5 a week for a man and wife with no children under 16, £6 a week for a man and wife with children under 16. Such persons being employees in a factory or other unit of employment, or members of societies established for mutual benefit, will join in groups.

Organisation and Conditions.

All contributions will be collected within the factory or other group and will be paid over to a central organisation distinct from the King's Fund and from any individual hospital, but so composed as to secure the coöperation of all interests concerned. This organisation will, unless and until hospitals otherwise arrange, distribute the funds collected under the scheme, after deduction of expenses of collection and administration, as payments towards the cost of patients after admission to hospital.

Regular contributors of 12*s.* per annum paid in one sum in advance, or 13*s.* per annum paid in weekly instalments of 3*d.*, will, together with their wives and children under 16, when accepted for treatment by a hospital, be relieved, by payments made on their behalf by the central organisation, from contributing to their cost of maintenance as in-patients and from any charge in all out-patient departments.

Sir COOPER PERRY having seconded, amendments were proposed by Sir WILLIAM COLLINS and the Speaker of the House of Commons, and the following resolutions were ultimately passed:—

1. That the scheme as redrafted be accepted in its main lines by the General Council as removing the reason for postponing the contributory scheme. 2. That the King's Fund should not itself administer a contributory scheme, but should, through its propaganda for the combined public appeal, assist all hospitals in their efforts to secure support from the classes whose members are treated in hospital; and should assist such hospitals as, after consultation with their medical staff, desire to initiate mass contributions in various forms.

The proceedings terminated with a vote of thanks to the Chairman.

MEDICINE AND THE LAW.

Tampering with Prescriptions.

Mr. W. P. Rookes, of Eastleigh, is an unqualified person who was under contract with the Hampshire Insurance Committee to supply drugs and appliances not including scheduled poisons. An examination of the scripts received from the Prescription Checking Committee revealed that between January and June, 1921, he had apparently been dispensing prescriptions containing scheduled poisons; while to a pharmaceutical service sub-committee he admitted that he had dealt with these by the simple method of omitting the poisonous ingredients. For example, Dover's powder, a bismuth mixture supposed to contain morphia and prussic acid, a strychnine tonic, and an ointment prescribed as ung. gallæ c. opio were all dispensed with one or more of the most essential constituents omitted, if this happened to be a scheduled poison. No reflection was cast on Mr. Rookes's ability to dispense; but his excuse that he must have accepted the prescriptions when his shop was full, and that he had omitted poisonous drugs rather than return them undispensed was not regarded as satisfactory. The effect of the omission of the scheduled poisons was justly regarded by the committee of inquiry as that of rendering the medicine or drug supplied to the patient of little or no medicinal value; of causing grave risk to the health of certain patients; and of rendering the medicine or drug supplied a much less expensive article, from the point of view of the salesman, provided he receive payment in respect of an article assumed to contain the scheduled poison. The name of Mr. Rookes has therefore been removed from the list of those supplying drugs and appliances under the National Insurance Act by order of the Minister of Health, and he has been ordered to pay the costs of the Insurance Committee to an amount not exceeding ten guineas. The decision of the Ministry could hardly have been otherwise.

Elkan v. *Montgomery Smith.*

In an action tried by Mr. Justice M'Cardie without a jury Mrs. C. Elkan sued Dr. E. C. Montgomery Smith alleging negligence on his part in the diagnosis and treatment of injuries to her ankle from a fall. Mr. Justice M'Cardie found that the plaintiff had not made out her case, and gave judgment for the defendant with costs. The case turned mainly upon two points. Mrs. Elkan and her husband stated that Dr. Montgomery Smith had not advised, and had actually opposed, examination by X rays, and had expressed himself satisfied that the treatment he was giving was sufficient and was having a satisfactory result, whereas, in fact, the plaintiff was very lame as the result of his treatment. Dr. Montgomery Smith declared positively that he had advised X ray examination, and had warned the husband as to the seriousness of the injuries which he had treated properly. With regard to the present state of the plaintiff's ankle, it was due to her own conduct in over-working it. Mr. Elkan had declined to have an X ray examination on the ground of expense. Dr. R. W. Salmond, called by the plaintiff, stated that the result of X ray examination, when recourse was had to it, showed that there had been a fracture of the lower end of the fibula, and of the lower end of the shaft of the tibia with partial dislocation backwards of the foot near the ankle-joint. Medical evidence having been called on both sides, Mr. Justice M'Cardie gave judgment as above, after pointing to the direct contradictions as to facts upon which he was called

to pronounce. The defendant had been said to have opposed definitely the employment of X rays; on the other hand, he had sworn that he had urged their use, and had urged that the patient should go to a hospital or nursing home. The judge could find no reason why Dr. Montgomery Smith, who knew that the injury was serious, should not have advised X ray examination, and he had heard his evidence that the plaintiff and her husband had decided against a nursing home on the ground that they could not afford it. It had been said that the husband was prepared to meet any expense, but as to this the absence of a nurse was a fact which strongly supported the defendant. He did not therefore accept the evidence of the husband or the wife. He was satisfied that Dr. Montgomery Smith did recommend the employment of X rays, and that he had diagnosed and treated the case with proper care. He found that the injury was not due to any negligence on his part, but to what the plaintiff herself had done. Dr. Montgomery Smith and the London and Counties Medical Protection Society, Ltd., whose solicitors, Messrs. Le Brasseur and Oakley, represented him, are to be congratulated upon the result of an action of a kind that must cause considerable trouble and anxiety to any medical man, however confident he may be in the rectitude of his own conduct. It may fairly be said to be unthinkable that a medical man of experience would not suggest, and would indeed actually refuse, the assistance of X rays in such a case as that described. And the judge appears to have fully appreciated this. Sir E. Marshall Hall, who represented the plaintiff, observed in the course of a trial that it was almost impossible to obtain medical evidence on the part of a plaintiff who alleged negligence against a medical man. This accusation was doubtless made in the heat of advocacy. The usual complaint of the lay public is that medical experts are called on both sides to give directly contradictory evidence.

Heroin Obtained by Bogus Prescriptions.

At the West London police court recently a man named Wolfe, stated to be an engineer, was convicted of being in unlawful possession of heroin, and sentenced to four months' imprisonment, and his wife, who had helped him to obtain it, was bound over. A druggist, W. Shrive, was fined £100 with an alternative of three months' imprisonment. Wolfe had been in the habit of obtaining the drug, to which he had been for some time addicted, by writing what purported to be prescriptions for it, signed as if by a medical man. The charge against the druggist was one of supplying the drug and not keeping properly the required register of his transactions. Since the Wolfes had had an anonymous letter warning them that they might get into trouble, they had had the heroin addressed to "Dr. A. Wolfe, c/o Poste Restante," Wolfe apparently claiming to have some kind of Austrian degree. The case suggests a question as to the kind of person who merely would warn such a man as Wolfe of the danger of his procedure, and do nothing to dissuade him from conduct dangerous to himself. There is also the far more important question whether anything can be done to stop sham prescriptions being used in order to obtain dangerous drugs. Unless the use of an official form, issued only to medical men, and carefully guarded from passing out of their possession, were to be rendered obligatory, it is difficult to suggest a remedy.

Hair-dye Dangers.

Mr. Justice Bailhache, sitting without a jury, recently gave judgment in favour of Miss D. E. Rivette, an actress, against Inecto, Ltd., the manufacturers of a hair dye, for £200 and costs, and dismissed the same plaintiff's claim, without costs, against E. A. Lauper, a hairdresser who had used in dyeing Miss Rivette's hair a preparation supplied by the company, and known as "Inecto Rapid." As a result of having her hair dyed Miss Rivette had suffered from eczematous dermatitis, affecting her head, face, and neck, her eyes having become temporarily closed. She had had to undergo medical treatment and had been treated at Charing Cross Hospital. She had also lost the benefit of the theatrical engagement in order to fulfil which she had had to have her hair dyed black. Evidence was given on her behalf that "Inecto Rapid" contained paraphenylendiamin and resorcin, and that these in combination with any strong alkali, such as was also found in the compound, would be dangerous. Dr. J. M. H. MacLeod added evidence with regard to the danger of the compound, and expressed the opinion that it should not be sold without ample warning. The defendant company contended that the dye had been used by thousands of persons without ill-effect, and that it had not been sent out without sufficient warning, and the defendant hairdresser said that he had carefully carried out the directions supplied and had no knowledge that there was any danger. Mr. Justice Bailhache held that Lauper in the circumstances had not been negligent; he had examined the plaintiff's head and had seen nothing to indicate that the dye should not be applied to it. His Lordship warned him, however, that he could not hope to be absolved again if injury occurred through his continuing to use the dye upon his customers. With regard to the manufacturing company, his Lordship said that the dye was admittedly unsafe where there were abrasions or eruptions, and more especially where the skin was sensitive. The company issued a kind of warning, but it was not sufficient for the protection of persons with delicate skins, and for them serious consequences might arise. A more complete warning was, however, now issued.

It is to be hoped that women who dye their hair, either for professional purposes and of necessity, as did Miss Rivette, or for the more common motive of vanity, will take note of the case. The danger which in a particular instance resulted from the use of the preparation named is not likely to be confined to "Inecto Rapid." In that case examination of the scalp by a hairdresser did not protect his customer against serious suffering, and an examination by a medical man on all such occasions hardly seems a practicable course to recommend. Besides, a medical man might decline the responsibility of guaranteeing safety in using any preparation of the nature described, or as to the nature of which he knew nothing.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

New Legislation for the Control of Venereal Diseases.

THE Roumanian Government has followed with great interest foreign movements to counteract the spread of venereal disease. Committees have been sent to observe conditions in France, Germany, and Czecho-Slovakia. It is hoped to take advantage of knowledge of measures which have proved useful in these countries when the new Roumanian law is compiled. At present the notification of venereal diseases is compulsory, but the authorities do not demand the names of patients. Practitioners must notify once a month, and specialists once a week, the numbers of venereal cases under their care. All prostitutes are medically examined twice weekly, and if found suffering from any venereal disease are sent to hospitals. All public hospitals have a venereal section, where specially trained doctors and nurses are employed. After her discharge from hospital with a negative Wassermann reaction a prostitute suffering from syphilis is compelled to present herself once a month for examination. A blood test is made on each occasion, and the woman is allowed to stay out of hospital as long as her reaction remains negative. All hospital (venereal) treatment and blood testing are free. The Minister of Health has set up polyclinics in each large town, with a section for venereal cases, where free treatment is given without regard to social and financial status. Files containing notes of all cases are kept and the polyclinic authorities have the

right to send serious cases—by force if necessary—into hospital. Syphilitic patients who do not present themselves at regular intervals are reported to the police and prosecuted.

Various Safeguards.

Every servant-girl before commencing service in a private house must be medically examined; if found suffering from venereal disease she is sent to hospital, if necessary compulsorily. Music hall artistes, cabaret actresses, dancers, female musicians (playing in cafés chantants), barmaids, and hotel servants are required to carry a medical certificate, which any doctor is entitled to issue; the names of those found suffering from venereal infection are sent to the polyclinic, where they are registered for treatment. If the registered person neglects treatment she can be sent into hospital, if necessary by force. If during a course of her treatment a woman runs the risk of infecting a man, and is reported, she is fined; if she is reported as having infected a man, she is sent to prison.

In towns and cities frequent surprise visits after 11 P.M. are made and suspected women are taken to the police station for medical examination. Girls under 16 years of age are not allowed in the streets after 9 P.M. without escort. The system of prostitution is thus preserved in principle; but in the next few years the question will be studied and compared with systems in force in other countries before a decision is reached concerning its continuation or cessation.

The legal punishment for wilful spreading of the venereal diseases is imprisonment up to a term of three years. This penalty extends to any person infected with venereal disease who marries without informing his or her partner of the fact. Only medical men are entitled to treat venereal cases; all other persons offering to treat them are regarded as quacks liable to prosecution.

Campaign Against Venereal Diseases in Jugo-Slavia.

Our Jugo-Slav neighbours have copied the Czecho-Slovakian system of defence against venereal diseases. The Sanitary Board of Jugo-Slavia has formulated proposals for a law similar to that already in force in Czecho-Slovakia; the Belgrade Parliament will shortly discuss the matter, and it is hoped that the law will pass without any amendment. The main proposals are as follows: Every person suffering from venereal disease to be obliged to undergo medical treatment; magistrates to be empowered to send into hospital, if necessary by force, all persons who by their manner of life may convey disease to others; such persons to undergo re-examination after a certain stated time; the Public Sanitary Board to have power to demand from doctors and medical institutions notification of cases without the names of the patients. Strict official secrecy is to be maintained. Medical men are to be compelled to report cases of delinquency, and to warn patients of the danger of infecting others; they must not treat by telephone or message, or advertise treatment in newspapers. Boys over 16 years of age are to receive enlightenment in sex matters and instruction as to the dangers of venereal diseases. Professional prostitution as now carried on is not punishable by law; under this new scheme the police and magisterial oversight of prostitution would be stopped. It is proposed also to close the brothels, and their keepers will be punished as procurers. Asylums for prostitutes will be established, where they will be dealt with as in reformatories. In Czecho-Slovakia this system has given very good results for one and a half years.

Feb. 27th.

DONATIONS AND BEQUESTS.—Mr. Joseph Bell, late of Manchester, bequeathed £1500 to the Manchester Royal Infirmary to endow a bed, and 5 guineas to the executors for paying a medical man to make a thorough examination of his body and to satisfy them without doubt that life is extinct.—Mr. Henry Behrens, of Bradford, left £1000 to the University of Leeds, £1500 to Bradford Grammar School for University scholarship, and £1000 to Manchester Royal Infirmary.

SCOTTISH BOARD OF HEALTH: RECOMMENDATIONS OF THE ECONOMY COMMITTEE.

Chapter X. of the third report[1] of the Committee on National Expenditure deals with the Scottish Board of Health, which was established on July 1st, 1919, with the powers formerly assigned to the Local Government Board for Scotland and to the Scottish Insurance Commissioners, and which shortly afterwards took over the powers and duties of the Highlands and Islands (Medical Services) Board as well as certain powers of the Scottish Education Department and the Privy Council.

The provisional estimate for 1922–23 has already been cut down in the revised estimate shown in Table I. in the light of the recommendations contained in the first interim report (the figures are all given in 1000's).

TABLE I.

—	(A) Estimate, 1921–22.	(B) Provisional estimate, 1922–23.	(C) Revised estimate, 1922–23.	(D) Decrease of (C) on (B).	(E) Per cent. of decrease of (C) on (A).
	£1000	£1000	£1000	£1000	%
Administration	274	213	202	11	26
Housing grants	2247	1073	896	181	60
Miscellaneous grants ..	706	584	553	30	22
National Health Insurance ..	1197	1066	828	238	31
Relief of dependants of repatriated Russians ..	7	6	5	1	38
Gross total	4430	2946	2483	463	44
Less appropriations-in-aid	1054	549	912*	363	—
Net total ..	3376	2397	1570	827	53

* The increase in appropriations-in-aid is mainly due to further receipts of £350,000 from sale of housing material.

The Scottish estimate of deficit on the housing schemes of local authorities appears very favourable when compared with the English figure on a population basis, but the Economy Committee find an explanation for this in the fact that, owing to greater difficulties in securing labour and materials, building progress in Scotland has been much slower than in England, and the maximum deficit in the form of subsidy to local authorities will not be reached until 1923–24 or possibly later.

TABLE II.—*Public Health Services.*

1 Description of service.	*2* Estimated grants in 1921–22.	*3* Provisional estimate, 1922–23.	*4* Revised estimate, 1922–23.	*5* Committee's recommendations for 1922–23.	*6* Scottish proportion.†
	£1000	£1000	£1000	£1000	£1000
Tuberculosis (Maintenance).	299	344	280	269	165
Tuberculosis (Capital)—					
1. Sinking fund	62	68	68	68	49
2. Grant	—	—	24	Nil	
Maternity and child welfare	100	111	120	120	143
Venereal diseases ..	46	63	65	65	58
Welfare of the blind	20	16	14	14	12
Port sanitation	7	7	7	Nil	Nil
Total ..	534	609	578	536	427

† Viz., 11/80ths of what Committee have recommended for England and Wales.

[1] H.M. Stationery Office. Cmd. 1589. 4s.

Table II. shows the estimates for recurrent expenditure in regard to grants for various services (the figures again given in 1000's).

In regard to the last column of Table II. the Committee would not think it fair to rely solely on a fixed proportion of the grants for England and Wales in arriving at the amount of the grants for Scotland, because local circumstances and the amount of progress made in recent years differ in the two countries.

The Recommendations.

The recommendations are substantially as follows:—

Tuberculosis (Maintenance).—The total provision, actual and prospective, of beds in England and Wales for the treatment of tuberculosis is 22,750, the comparable figure for Scotland being 4688. The English figure represents a drastic reduction of the provision agreed between the Treasury and the Ministry of Health in February, 1921. The Scottish Board of Health, on the other hand, appears to have made no corresponding reduction. It is admitted that tuberculosis is more prevalent in Scotland than in England and Wales, and consequently we understand the Treasury allowed a more generous margin to Scotland than in the case of England. On the other hand, the actual number of beds available in Scotland is higher than the Treasury contemplated. We recommend that the grant for tuberculosis maintenance should be limited to £269,000, which is much more than on the proportionate basis of England and Wales.

Tuberculosis (Capital).—A provision of £24,000 is asked for in the revised estimate in respect of capital expenditure on sanatoriums. Under the Finance Act, 1911, a sum of £1,500,000 was earmarked for sanatorium capital grants in the Consolidated Fund, and of this sum, Scotland's share amounted to £158,000. We are informed that Scotland still has in hand sufficient to meet such capital expenditure on sanatoriums as is likely to be incurred in 1921–22 and 1922-23. In these circumstances, we recommend that the Scottish Board of Health should meet their capital expenditure out of the remaining balance which they have in hand, and that the additional grant of £24,000 should be withheld.

Other Grants.—We recommend that grants as follow be allowed: Maternity and child welfare (£120,000), venereal diseases (£65,000), welfare of the blind (£14,000). In regard to port sanitation (£7000), as in the case of a similar item in the Ministry of Health estimates, we suggest that as this expense was, until recently, borne by the locality, the Exchequer Grant should cease.

Constitution of Board.—The present constitution of the Scottish Board of Health is made up of the following paid members: 1 chairman, 1 member, 2 medical members, 1 legal member, 1 woman member, making 6 in all, with salaries ranging from £1000 to £1800 per annum, together with bonus in all cases. We are not sufficiently acquainted with the duties of the Board to be able to make a recommendation on this matter, but it has been suggested to us that the present number of members is excessive and might be reduced to 3—viz., a chairman and 2 other administrative members. Such change would require amendment of the Scottish Board of Health Act, 1919.

The reductions proposed by the Board plus the further reductions recommended by the Committee are estimated to total £869,000, and bring the provisional net estimate for 1922-23 down to £1,528,000.

LEEDS WORKPEOPLE'S HOSPITAL FUND.—In spite of the great amount of unemployment in the city, the income of this fund for the year ending Dec. 31st, 1921, has amounted to £35,837. This excellent result reflects great credit upon all who are responsible for the management of the affairs of the fund. The main source of income is, of course, as always the regular subscriptions of the workpeople of the city; from this source £25,853 was obtained. Collections in public houses brought in £5798; in clubs £1343; the hospital gala £1132, and various competitions and collections in schools £1707. The following grants were made to the various medical charities of the city: General Infirmary at Leeds, £18,000; Leeds Public Dispensary, £2500; Hospital for Women and Children, £2500; Leeds Maternity Hospital, £900; Leeds District Nursing Association, £750; Jewish Hospital, £200; and other smaller grants which bring the total up to £25,105. Out of the fund there are also supported the three convalescent hospitals, which are for the use of those only who are subscribers. During the year 1372 patients have been treated at these homes.

Correspondence.

"Audi alteram partem."

RADIUM AND THE ERLANGEN X RAY METHODS.

To the Editor of THE LANCET.

SIR,—1. Without wishing to be controversial, is it not advisable to say that the cause of radiotherapy is not likely to be advanced if advocates of the newer intensive X ray methods show an imperfect knowledge of the results of radium therapy, and unjustifiably depreciate its value, and vice versa? Thus, take the statement of Dr. R. Morton (THE LANCET, Feb. 25th), that "any source of radiation placed into or in contact with the lesion is a crude procedure unlikely to be followed by appreciable success" (!) The purpose of radiation measures being (*a*) a general effect (still imperfectly understood), and (*b*) a local effect, the latter (other things being equal) surely may be as well accomplished whether we insert or lay on the radiating substance, or project radiations at or into the tissue from a distance. For the mere purpose of reading a book it is immaterial whether we use a reading-lamp or light from the distant sun! Similarly radium or X rays may be of equal value in a given case, and though either can be, and often of course is, used "crudely," the one is as little essentially "crude" as the other! Equally with X ray treatment is *scientific* radium treatment in its infancy, and though Dr. Morton "foresaw years ago that radium was bound to prove a failure in the treatment of carcinoma" (within narrow limits), almost all the recent indications show that this view is quite unjustified. Apart from comparative biological tests of radium and X rays, such as those of Krönig and Friedrich, showing their essential similarity of action, are such results as those of the London, Manchester, Stockholm Radium Institutes, of the French, Dresden, Dutch, and American radium workers thus to be dismissed? *Their* procedures are not "crude," and their results are "appreciable," showing that with radium salt or emanation in combination with or alternative to surgery radium is coming to have a very definite and valuable place in the treatment of malignant disease.

2. On the other hand, Dr. J. C. Mottram (March 4th), in rightly pointing out certain advantages of radium, suggests that the Erlangen X ray methods usually cause very great constitutional and blood damage. Opposed to this it should be said, firstly, that many of the Erlangen methods are concerned with tuberculous conditions, castrations, sarcomata, and laryngeal, &c., cancers—i.e., smaller areas than pelvic or thoracic carcinomata involve, with need for smaller doses, causing very slight blood or constitutional changes. And, secondly, it should be made clear that severe changes are more likely to be found when some *other* methods of intensive X ray treatment than the Erlangen are used in gynæcological malignancies. The older methods used by Warnekros, for example, with very large fields, led to the frequent necessity for blood transfusion. At a recent visit to his clinic I found that this is rarely necessary now. The Bavarian school pay very great attention to blood changes, their system, in fact, being largely based on the necessity for conserving the blood. And when it is realised that their gynæcological or other carcinoma patients are faced with the alternatives of an extensive operation, with all its results, or intensive X ray treatment, the average loss or diminished production of about a quarter of a million reds and a thousand whites per cubic millimetre (which, in many cases, is a deficiency entirely made up by the thirtieth day) is perhaps not too high a price to pay for the double gain of escaping a serious and dreaded operation and the apparent cure of a formidable malignancy! Irreversible blood damage, a "Rontgen cachexia" (Krönig) very rarely met with—for example, when massive abdominal tumours are irradiated, and

due to diminished antibodies, or to poisoning from the absorbed products of the tumour in its rapid regression—has no special relation to the Erlangen methods, which above all are distinguished for their consideration of the blood picture, in the hands of their originators at least. Their methods cause no more damage than massive radium dosage does, or extensive operations, or hæmorrhagic ulcer or tumour blood losses. And as to damage of other tissues—bladder, intestine, &c.—their reaction limits have been most carefully calculated, so that scientific X ray treatment causes less damage as a rule to intervening tissues than surgical procedures do. A fair margin of safety is attainable when the depth-dosage is calculated accurately in accordance with tables such as Voltz's, and when consideration is given to all the anatomical and biological factors.

3. Dr. Mottram points out that the radio-sensitiveness of tumour cells is not sufficiently taken into account in the Erlangen dose-method. The view of Dr. Wintz, with whom I discussed this point last autumn, is that his results show that, apart from sarcomata, all carcinomata react well to the 110 per cent. skin dose, septic growths being first ionised with copper selenate. However, it is difficult to believe that Dr. Wintz is right in this conclusion, if it is meant to be taken as a *final* statement; but until we have some better method than the histological for testing the radio-sensitiveness of a tumour before radiating it his result may be accepted, based as it is on much work at Freiburg and elsewhere on the "cancer-dose," and on many clinical observations. Future refinements of dosage may come from the experimental side, or from such conclusions as those of the Dresden school of radium workers on the "ripeness" of a carcinoma in estimating their radium "cancer-dose." Dr. Mottram further brings forward Dr. Wood's experimental results with the "lethal dose" for animal tumours. But it should be clearly understood that such experimental results in animals cannot without critical analysis of all the factors be applied to human carcinoma. And in particular Dr. Wood's results ignore the most important factor of "scattered radiation," which may add 20–80 per cent. to the depth-dose calculated by only distance and penetration factors, and furthermore they traverse many clinical results—for example, those attained with rodent ulcer, with sarcomata, and with portio-carcinoma. This "scattered radiation" factor is too commonly undervalued in calculations both of X ray and radium isodynamic curves, and experimental results on small animals need great correction before they can be applied to the human body with its large scattering power on incident or global radiation.

4. The respective advantages and disadvantages of radium and X rays have been frequently discussed; for radium its constancy, portability, and comparative ease of application to the body surfaces or insertion into body cavities or tumours; against it (apart from its price!) its poor dose-quotient (rapid loss in intensity as the distance increases) so that its effect, in tubes of average strength, practically ceases at 2 (or 3) inches distance. Hence the practical impossibility of irradiating large areas, or obtaining satisfactory distance effects, and in many cases the necessity for employing many tubes, whose strength, sites, and time of use must be most carefully calculated beforehand. (The use of emanation in tubules and radiation tunnels, and of gamma radiation at a distance with large quantities are recent improvements in method.) Radium insertions share with surgical measures the disadvantage that their use involves the risk of setting free cancer emboli (this in sarcomata chiefly) whereby metastases may be originated. Against X rays chiefly is the frequent disadvantage that normal tissues are subjected to considerable radiation together with the morbid part; in their favour are their applicability to very large areas, and the excellent dose-quotient with highly penetrating rays, large effective doses being readily given at depths of 4 inches or more. Naturally each agent has its own problems and varieties of technique, but they are complementary not antagonistic. And because surgery, radium, or X rays may in a given case be equally valuable alternative methods, or one or other be preferable, or often they may well be combined in the treatment of the same case, the ideal for each new case of malignancy presenting itself would seem to be a consultation between surgeon and radiologist to devise some scheme of treatment, which may need frequent revision as the case progresses favourably or otherwise.

This consultative system between surgeon, radiologist, and pathologist, with reference to the physicist in difficult radiation problems, has now been carried out for some months at the Middlesex Hospital, and it seems to be a plan which must be for the benefit of the patients and the advance of knowledge. More than any partisan rivalry between surgery, radium, and X rays will an active co-partnership—with constant reference to all the other viewpoints, physical, pathological, and bio-chemical—be likely to lead to success in the final understanding and control of cancer.

I am, Sir, yours faithfully,

J. H. DOUGLAS WEBSTER.

Chandos-street, Cavendish-square, W., March 4th, 1922.

ALPINE TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In your issue of March 4th Sir Martin Conway, M.P., asks whether it would not be a breach of trust to divert funds obtained by the patronage and support of the Queen Mother for the treatment of English middle-class patients in Switzerland, in order to enlarge a similar institution in the damp and trying climate on the British Isles. This difficulty, if real, might perhaps be avoided by the vote, at a general meeting of the original subscribers to the Fund, on the following grounds: (1) that the advantages claimed for the Swiss climate, even if real, are outweighed by the disadvantages of treatment in Switzerland for the middle classes; (2) that the so-called damp and trying climate of the British Isles is a much maligned factor, and not the unmitigated evil it is usually represented to be.

As regards (1), the advantages claimed for the Swiss climate are bright sunshine and cold dry air. As a matter of fact fog, rain, and damp are by no means unknown. The patient who has completed his course of treatment in a Swiss sanatorium is warned that he will not be able to stand the English winters, but must return for further "treatment." The expense and inconvenience of this necessity makes it impracticable for most members of the middle and professional class. After a six months' course he requires a month or two before resuming work to accommodate himself to the change of altitude and climate, or to use a common expression, to "harden up." The middle class or professional man or woman cannot afford the long journey for one course of treatment, still less the necessity for repeated sojourns in a foreign country in order to maintain the health. The English sanatorium aims at getting the patient well enough to resume work in the shortest possible time. The Swiss sanatorium may succeed in getting the patient well enough to continue Swiss sanatorium treatment. Perhaps the greatest disadvantage of treatment in Switzerland, from the point of view of the middle-class patient, is the long journey. The fatigue and strain of many hours travelling must be felt even by travellers in robust health. The results may be, and frequently are, disastrous in cases of active tuberculous trouble.

(2) After many years' experience of sanatorium treatment in Switzerland and in various parts of this country, including Cheshire, Surrey, Sussex, Hampshire, Northamptonshire, West Wales and Mid Wales, we have no hesitation in saying that there is nothing in the English climate which makes it unsuitable in any way for the treatment of pulmonary tuberculosis; provided that treatment is carried out in the clean air of the country side. Further, it is to the patient's advantage to get treated for his complaint in the same

climatic conditions under which he will have to live in the future.

The King Edward VII. Sanatorium, Midhurst, was founded by the late King for the very class of patient to which Sir Martin Conway refers, and it seems unfortunate that its magnificent buildings, lovely natural surroundings, dry sandy soil, with every convenience for treatment on modern lines, should not be preferred to prolonged and repeated exiles in a foreign land, with doubtful benefits to offer in substitute.

We are, Sir, yours faithfully,

H. O. BLANFORD, M.R.C.S., L.R.C.P., M.B., B.S. Lond.,
D. A. HUTCHESON, M.D., M.B., Ch.B., D.P.H.,
B. N. ASH, M.R.C.S., L.R.C.P.

King Edward VII. Sanatorium, Midhurst, March 9th, 1922.

To the Editor of THE LANCET.

SIR,—May I ask for space to reply to points raised in recently published correspondence in your columns. Sir Martin Conway, eulogising Montana at the expense of Davos and its neighbours, repeats (Feb. 11th) the misstatement that the first named has two more hours of possible sunshine per diem in mid-winter than health resorts in German-speaking Switzerland. I refer him to your issue of Nov. 8th, 1919, where the error is suitably refuted by you. His quotation from the *British Journal of Tuberculosis* is in a similar strain. He seeks (March 4th) to make capital once more out of anti-German feeling by quoting returns showing that there were 363 Germans in this district on the 10th ultimo, but surely still further cripples a lame plea by dragging in German-Swiss visitors as a make-weight.

Drs. Savy and Muthu have known the Alpine climate to fail in curing, and proceed with a light heart to argue from the particular to the general, concluding that the advantages of high altitudes are sorely over-rated. I should be the last man to belittle the achievements of British sanatoriums, and can indeed, of personal experience, confirm Dr. Muthu when he says that good results are to be had in the worst of weather. Yet in England during the war there were patients whom one would have given anything to be able to transfer to the Alps, patients unable to defy adverse external conditions, patients stuck in the mud for the lack of such a stimulus as a big change of climate offers. I imagine that most of us who have worked at both altitudes must have met with such cases.

This rebuttal of misstatements and false inferences is perhaps itself controversial. Yet I venture to deprecate the controversial element in this correspondence. Both highlanders and lowlanders have a good case which they only spoil by exaggeration and aggressiveness in the endeavour to persuade the tuberculous or their doctors that "Codlin's the friend, not Short." Advertisement is doubtless inevitable, but the spirit of it tends to darken counsel. Open-air treatment is essentially climatic wherever practised. Yet one finds men administering it who betray no interest in any climate beyond their immediate horizon, who might, by studying climatology as a comparative science, clarify their conceptions and widen their sympathies. When the Queen Alexandra Sanatorium was opened, a leading object was coöperation between it and English sanatoriums. Has the sale of the building been fatal to such an aspiration?

I am, Sir, yours faithfully,

ARNOLD F. BILL.

Davos-Platz, Switzerland, March 9th, 1922.

THE PRINCIPLE OF GRANTS-IN-AID.

To the Editor of THE LANCET.

SIR,—I think that many of your readers must have shared my feeling of regret that in your leading article of Feb. 25th you should have seemed to support the principle of the grants-in-aid made by the Ministry of Health to local authorities in respect of various services. These grants were described by the Geddes Committee as a "money-spending device"; you state that "originally they formed an important part of the delicate mechanism whereby a central board might influence the working of bodies more under the sway of local interests," and add that "it would be hard to refute the contention that the small amount to be borne by local authorities" (25 per cent. of the total local expenditure) "had much to do with their ready acceptance of the task of providing facilities for the early treatment of venereal disease." In other words you appear to admit that the grants are a two-edged sword for cutting the purse-strings of the community. The local authority is "influenced" and then exempted from the full financial consequences of its action. It pays only a fraction of the total cost.

The merits of the scheme from the point of view of the Ministry of Health are obvious. The Ministry having decided on a policy of public health drafts a Bill. This is invariably of the "skeleton" type in which details have no place. Parliament having been prepared by emphasis on the dangers of the particular social ill it is sought to cure, passes the measure. Thereafter Orders in Council are invoked to clothe the "skeleton" with flesh. The approved scheme is now sent to local authorities, who are told they must carry it out and at the same time promised that if they do so they will be largely freed of financial liability. To criticise this expenditure now becomes more or less a fool's errand. For the Ministry is not responsible. Parliament in its wisdom passed the Bill and gave the local authorities powers to set up machinery of their own. Nor are the local authorities responsible. They are only obeying Parliament and the Ministry. In any case they are not spending much money. No one, in fact, is responsible, but the public money is poured out just the same. The following figures taken from the Geddes Report leave no doubt on this score:—

Cost of Health Services.

1913-14 .. £117,000 | To-day .. £3,210,000

The only possible defence of this system would be that the schemes of the Ministry met with universal approval. This is far from being the case. There are medical men, and laymen too, in the country who, on strictly medical grounds, regard many of these schemes as mistaken in conception and execution. Yet, thanks to the system you seem to approve, their protests avail nothing. The outbreaks of medical socialism at Bradford and Willesden are, in the view of many of us, the logical result of the policy until recently pursued by the Ministry of Health. These outbreaks, following on a preponderating Labour influence in the local governing bodies, have greatly disturbed the medical practitioners of the country, who begin to see where the present movement may end if it is suffered to go on unchecked. I am, Sir, yours faithfully,

London, March 8th, 1922. R. M. WILSON.

THE LIMITS OF BODY TEMPERATURE.

To the Editor of THE LANCET.

SIR,—Your editorial note on this question in THE LANCET of March 11th states that "there is little doubt that for man the temperature of the body cannot well rise above 115° F., for even a short time, and 111° F. may be placed at the highest temperature compatible with life." I entertain grave doubts as to whether a man who has had a temperature of 111° F. for anything over a few hours is likely to recover. I have seen an exceptionally large number of heatstroke cases in British troops in India and Mesopotamia, probably going into a few thousand, with temperatures varying from 107° to 113° F.; in no case where the temperature actually reached 111° F. did recovery take place. On several occasions I have seen men with temperatures of 110° and 110·2° recover, and on two occasions the temperatures reached 110·4° F. with favourable results. In June, 1919, while inspecting the British Station Hospital, Nowshera (Punjab, India), I saw a recovered case of heatstroke in which the temperature was stated to have risen to

110·6° F. I remember remarking at the time on the extraordinary good fortune of the patient; no special precautions to ensure scientific accuracy had been observed in taking the temperature and only one clinical thermometer had been used. I can vouch for the reliability of the records in the two cases referred to above in which the temperature reached 110·4° F. One of these two was seen by the late Lieut.-Colonel E. Lawrie, I.M.S., and myself in consultation at the end of May, 1894 or 1895. He was an electrical engineer, and was living in a compound in which ice was manufactured and in which incidentally there was a chemist's shop (Messrs. A. Abid and Co., Hyderabad, Deccan). We took the patient's temperature with three or four thermometers. The difference between the highest and lowest was 0·4° F., a noteworthy point; the average was 110·4° F. We placed him in sheets soaked in ice-cold water and packed broken ice about him for three hours, by which time his temperature had gone down to 102·6° F. and the ice was removed. The temperature rose to 106° late the same evening and another one and a half hours' ice treatment brought it down to 101° F., after which he made an uninterrupted recovery with the exception of headaches. He was sent home for a year and returned to India; he is, I believe, still going strong. I published this case shortly afterwards. In the other case of recovery with the same temperature the history was almost identical.

Since that time there have been many cases of 110° F. or slightly over with recovery in our British troops in India. Almost every year in the Punjab we had one or more cases of the kind. My own impression is that these cases recover because in every British station hospital ice is always available for treating them at once. To this fact alone is attributable the enormous drop that has taken place in the mortality of heatstroke cases in late years in India. In this term "heatstroke" I include only those cases presenting the classical symptoms of what used to be termed "heat apoplexy." In the high incidence of heatstroke in Nowshera in June, 1919, there was only one death, and a similar experience in Peshawar at the same time was associated with only one fatal case.

I believe that if a heatstroke case with a temperature of over 110·6° F. remains untreated with ice externally (in the orthodox way) for even 12 hours death is inevitable. I should be glad to learn through your columns how far my experience coincides or disagrees with that of other members of the profession who have treated heatstroke cases in the tropics.

I am, Sir, yours faithfully,

P. HEHIR,
Major-General, I.M.S. (ret.).

Westward Ho!, Devon, March 13th, 1922.

B-VITAMIN AND PIGEON BERI-BERI.

To the Editor of THE LANCET.

SIR,—Dr. Samson Wright, in a letter in your issue of Feb. 11th, does not accept the evidence of my experiments showing that avian beri-beri is due to loss of the oxidative ferments of the body. His main objections to these conclusions are based on the time relations between the beginning of the vitamin-free diet and the onset of the symptoms of B-vitamin deficiency. However, it seems to me that Dr. Samson Wright, in his reply, does not do full justice to the whole meaning of the experiments, and therefore I will give a short summary of the main conclusions of these experiments so as to avoid all misunderstanding.

1. The symptoms of B-vitamin deficiency consists in a depression of the energetic processes of the body as shown by the subnormal temperature and muscular weakness in the early stage and the well-known signs of cerebral irritation and paralysis in advanced period. It is to these symptoms in the first instance that apply the conclusions that they are due to loss of oxidative power of the tissues, the insufficiency of the alimentary canal being only a part of the general insufficiency of all tissues.

2. The oxidative process of the cell takes place in a series of different stages. There are two main phases of the whole chain of events. The first is given by the reduction of the carbohydrates to lactic acid and the second by the oxidative removal of the formed lactic acid. I think that the disturbance of the chemical reactions in B-vitamin deficiency aims at the second phase.

3. The reduction of the oxidative power of the tissues in the vitamin-deficient animal is a fact which can be demonstrated in vitro. And the production of all the main symptoms of beri-beri by sublethal doses of prussic acid shows that the reduction of the oxidative power is the cause of the malady and not secondary effect. It is known that prussic acid inhibits the action of the oxidative ferments.

4. And, finally, the experiments of Messerli (adsorption of charcoal and bolus alba) seem conclusive against the intoxication theory of Dr. Samson Wright and once more draw the attention of the readers to the original papers.

I am, Sir, yours faithfully,

Feb. 26th, 1922. W. R. HESS.

GRADE A (CERTIFIED) MILK.

To the Editor of THE LANCET.

SIR,—Having some years ago obeyed the call of "back to the land," I determined that the milk sold from my farm should be of a high standard of cleanliness. It has occurred to me that it would be of great interest to hear the views of your readers as to the value, or otherwise, they would place on milk as a food which is produced under the very onerous conditions of the Grade A and the Grade A (Certified) licences of the Ministry of Health.

My original aim of cleanliness in milk production was, of course, greatly influenced by a scientific training. I have now raised my former standard to an even higher pitch by improving the conditions of cleanliness of the milk in accordance with the drastic Grade A (Certified) requirements. The Ministry's licence to sell certified milk—i.e., as bottled in sterile bottles *at* the farm—requires inter alia that the whole herd shall successfully pass the tuberculin test. Further, in addition to their frequent inspections to see that their high standard of cleanliness is maintained, frequent samples of the milk are taken and the searching test of a bacteria count is made—this soon shows whether the methods of milking are really scientifically clean and not merely apparently so. Now I and others have found that the production of milk on this basis is very costly—e.g., I lost over £1000 last year in disposing of valuable cows which failed to pass the tuberculin test that would have been retained in an ordinary herd. The question of cost seemed to me to be the only objection to this class of milk, since a high-producing cost means a high-selling price—still, however, the selling price is very much below that of many of those patent baby foods, which are composed chiefly of dried milk. Hence, I presume, the retail price is not the final court of appeal. My idea is, though I may be wrong, that Grade A (Certified) raw milk, which bears the Government's hall mark of purity, containing as it does all three grades of vitamins, should be of undoubted value, especially to children and invalids.

I am, Sir, yours faithfully,

R. BORLASE MATTHEWS.

Greater Felcourt, East Grinstead, March 8th, 1922.

ANCOATS HOSPITAL, MANCHESTER.—At the ninety-third annual meeting of this hospital it was stated that the number of patients treated in 1921 was 28,677, as compared with 25,313 in 1917. In 1914 the cost of working the hospital was £9000, and in 1921 £27,000. There was an increase in subscriptions, especially in those from working men. In the year's working there was a deficit of £2500, and an accumulated deficit of £15,000. Lord Cawley, the chairman, has given £10,000 in one gift and £1000 in addition towards the cost of the nurses home, but a sum of £15,000 is still needed to complete this institution.

Obituary.

AUGUSTUS DÉSIRÉ WALLER, M.D., C.M. ABERD., D.SC. PERTH, W.A., HON. LL.D. EDIN., HON. M.D. GENEVA, F.R.S.,

DIRECTOR OF THE PHYSIOLOGICAL LABORATORY, UNIVERSITY OF LONDON.

Prof. A. D. Waller, who died on March 11th at his home in St. John's Wood, was the son of a physiologist of European reputation, and performed the rare feat of becoming as distinguished as his father in his own subject.

Born in Paris on July 12th, 1856, when his father, Augustus Volney Waller, was in his fortieth year, Augustus Désiré was educated at the Collège de Genève, going on to Aberdeen and Edinburgh Universities, and taking his M.D. at the latter University in 1881. His father began his professional life as a general practitioner in Kensington, and the son also soon abandoned medical practice to devote himself entirely to physiological research, a decision which became final after his removal to London and his marriage to Alice Mary, second daughter of the late George Palmer, M.P., of Reading. In 1883 he began his long association with the teaching schools of London University, first as lecturer on physiology at the London School of Medicine for Women, and then for 16 years at the Medical School of St. Mary's Hospital. Finally, he was appointed director of the Physiological Laboratory established in 1902 by the Senate of London University with the aid of generous donations for equipment and maintenance from members of the Palmer family. This laboratory was intended to serve the double purpose of affording to University lecturers and other accredited physiologists a place to present the results of current research by lectures and demonstrations, and of providing advanced students with opportunities of research. In 1921 the London County Council, having decided not to renew its annual grant of £500, the Senate proposed to close down the laboratory as the University could not afford to make up the deficiency. The protest from physiologists throughout the country was no small tribute to Waller's work and that of his assistant director, Mr. W. L. Symes, and resulted in the rescission by the Senate of its decision and a vote of an increased annual grant from the University of £1000. Unfortunately Waller's death interrupted his effort to raise a capital sum of £100,000, or an annual income of £5000, to place the laboratory on a safe and permanent financial basis, for such an accomplishment would have fitly perpetuated his memory.

Waller's earliest piece of research was done at Leipzig on the blood tension in the auricles; throughout his life the circulatory mechanism retained his interest, his touch with clinical cardiology being maintained by a position on the staff of the Westmoreland-street Heart Hospital. This close association in his own person between physician and physiologist resulted in the first successful attempt to display by means of a mirror galvanometer the currents generated in the living heart, and laid the basis of the whole of modern electro-cardiography. Following the work of the Hyderabad Chloroform Commission, he investigated the dangers of chloroform anæsthesia, conclusively showing that these did not depend so much on the total dose administered as on the percentage of chloroform vapour in the inhaled air. He continued to hold the view that chloroform administered according to his methods was the safest anæsthetic. His investigations into the electrical phenomena of plants were interesting in themselves, and in relation to the controversy with Sir J. C. Bose as to whether his "crescograph" showed the movements of growth in living plants. Waller insisted that the phenomena were not vital, but could be seen equally well when plants killed by boiling, or fiddle-strings, were similarly excited. In the last two years Waller used the same electrical methods for demonstrating the existence and degree of emotional states. His work seemed to show that in normal persons the apprehension of pain caused a greater effect than pain itself, and that emotional states might be revealed against the will of the patient, and so used for forensic purposes. Record of all these researches was made at the time in our own columns.

Waller was a clear and convincing writer. Apart from his Introduction to Human Physiology, on which countless medical students have based their subsequent studies, may be enumerated lectures on Animal Electricity (1897), Signs of Life (1903), Physiology the Servant of Medicine (1910), the Psychology of Logic (1912), and numerous scientific papers in the Proceedings of the Royal Society and the *Journal of Physiology*. In many of these the central aim is apparent to establish more intimate relationship between physiologist and physician, the man who "wants to know" and the man who "wants to help." In none of them it comes out more clearly than in his Hitchcock lectures delivered in 1909 at the University of California.

The academic honours which attended a useful and industrious life were many and various. Prof. Waller was corresponding member of the Société de Biologie, Paris, of the Physiological Society of Moscow, and of the Royal Academies of Medicine in Rome and Brussels. For his electro-cardiac work he became Lauréat de l'Institut de France. He was an F.R.S., as his father was before him.

The funeral took place at Marylebone Cemetery on March 15th in the presence of a large concourse of distinguished people.

BENJAMIN MOORE, M.A., D.SC., L.R.C.P. LOND., M.R.C.S., F.R.S.

WE much regret to chronicle the untimely death of Dr. Benjamin Moore, Whitley professor of biochemistry at the University of Oxford, who died on March 3rd, aged 55, as the result of heart failure following influenza. Benjamin Moore received his early education at Queen's College, University of Belfast, where he graduated in arts and medicine, proceeding to Leipzig to pursue his studies in chemistry. He began his professional career as a chemist, and was on the teaching staff of University College, London. Here his original bent and intellectual power were recognised, and his work secured for him the post of professor of physiology in the Medical School of Yale University. He remained in the United States for a short time, returning to take up his appointment as lecturer on physiology at Charing Cross Medical School. In 1902 he was invited to fill the newly founded Johnston chair of biochemistry in the University of Liverpool. While there he had many opportunities of displaying his powers of initiation and organisation in research, and in conjunction with Mr. Edward Whitley started the *Biochemical Journal*. He took a characteristically thorough line while in Liverpool by deciding to qualify in medicine, so that he might be able to approach biochemical problems with a first-hand knowledge of medicine. In 1912 he was elected F.R.S. in recognition of wide and original biochemical work. He remained at Liverpool till 1914, and acted as Dean of the Medical School, retiring from a post which he had held with great distinction for 12 years, to join the Medical Research Staff under the National Health Insurance scheme.

The war presented a number of important problems to scientific workers, and Moore was so versatile that he was personally concerned in the solution of many. The poisoning among T.N.T. workers may be mentioned as one such problem that was successfully attacked by Moore, his recommendations for the safe protection of the workers being adopted by the Government. In 1920 Mr. Edward Whitley founded the chair of biochemistry at Oxford and Moore became the first professor of that subject in the University, being at the same time elected to a Fellowship at Trinity College, Mr. Whitley's college.

One side of Moore's versatility and liberality of thought was very manifest in his pronounced views with regard to the future of the medical profession.

He was an important mouth-piece of the advocates of a State medical service, and those who would read the most valid arguments for the institution of such a service might well consult a paper written by him and Mr. C. A. Parker in THE LANCET[1] at the time of the institution of the Ministry of Health. The paper sets out the scheme for an organised clinical service, including general practitioners, consultants of all sorts, and pathologists, and going further it rolled in midwives, nurses, and dispensers, the conclusion come to being that a whole-time salaried service could both secure coöperation and mutual help between practitioners, and also be centrally controlled and kept up to a high standard of efficiency by a Ministry of Health. We may also refer our readers to an article on the incidence of phthisis in the factory, in the same volume of THE LANCET, which was founded upon information which Moore had personally gathered, to assist him in pleading for the institution of an industrial health service. For purposes of this paper observation was kept during prolonged visits to workshops, a statistical study was made of the operations of the National Health Insurance Act and of the returns of the Registrar-General, and the results were collated to illustrate the effects of urban types of employment in influencing the prevalence of phthisis. Moore's paper, though dealing with only one disease, and with only one section of the population, was exactly illustrative of the kind of work which would have to be done by the Ministry of Health.

In his laboratory work Moore wandered in many fields—the hæmolytic action of fatty acids, the acid of the gastric juice in cancer, the poisonousness of heavy metals to bacteria, the treatment of trypanosomiasis by atoxyl, the osmotic pressure of proteids, the nutrition of marine organisms, the fixation of atmospheric nitrogen by algæ, the mortality from tuberculosis in the shoe trade—all this does not exhaust the list of directions in which he brought his talents to bear. He was a man who evidently enjoyed the fun of experimental work without being in the least impressed, or trying to impress others, with the importance and solemnity of what he was doing. This wide dispersion of interest, leaving no particular points pre-eminently associated with his name, did not arise from mere vagariousness of mind. Professionally a biochemist, he was a general physiologist, a biologist, and in late years, a student of the universe, promoting a geophysical society with the same zest with which in 1906 he started the *Biochemical Journal*. He had a clear conception that the world was a whole, and saw no definite dividing line anywhere between the problem of the synthesis of carbohydrates from water and CO_2 by the action of sunlight and the question whether the Liverpool tramway men were right to strike. Like others who have looked at the cosmos and tried to connect nebulæ with the psychology of social progress, he met the difficulty of life and the relation of mind and matter. He attempted to bridge the gap between live and dead things by postulating a "biotic energy" in parallel with heat and light and electricity and manifesting itself partly by transformation into these. How far he found a successful way round the question by his conventions, without abandoning what is essentially a mechanistic outlook, may be questioned, but, as he points out in the characteristic volume on the "Origin and Nature of Life" in the Home University Library, knowledge and beauty progress by trials of the imagination, and it has often been in the end necessary to discard a hypothesis which has for a time been fruitful and useful. This book well represents the middle parts of the development of his ideas about the world. It was preceded by a conventional elementary physiology, and succeeded by the "Dawn of the Health Age" in which colloids and crystalloids expand into a gospel of social amelioration and reform. Through all these wanderings he went about with a breezy air of confident optimism which is not particularly apparent in his writing but will be an outstanding recollection of those who knew him. His general ideas will stimulate while they will often fail to convince, and workers at a singular variety of topics will find, when they are hunting up the literature, that Moore has made important contributions to their early history.

Benjamin Moore is a real loss to the thinkers of his country.

[1] THE LANCET, 1918, ii., 85.

ALFRED HILL, M.D. ABERD., M.R.C.S., L.S.A., F.R.S.E.,

LATE MEDICAL OFFICER OF HEALTH FOR BIRMINGHAM.

Dr. Alfred Hill, who died on Feb. 22nd, at Freshwater Bay, at the age of 95, had lived in the Isle of Wight since his retirement from the post of M.O.H. of Birmingham in 1903. He was the first medical officer of the city appointed after the passing of the Public Health Act in 1872.

Born at Walsall on May 19th, 1826, Alfred Hill was educated at Queen Mary's Grammar School, and at the age of 16 was articled to his uncle, a medical practitioner at Stone, Staffordshire. In 1847 he became a student at Queen's College, Birmingham, and even before qualification was entrusted by the board of guardians with the partial charge of the old town infirmary at Lichfield during an epidemic of cholera. This was in 1849, and in the following year he qualified M.R.C.S. Eng. and L.S.A. In 1851 he was appointed district public vaccinator and was elected to the chair of chemistry and toxicology at Queen's College, Birmingham. The following year he became a district medical officer and nine years later was appointed public analyst. Later he became surgeon to the borough prison, and was appointed examiner in public health, chemistry, and medical jurisprudence in the University of Aberdeen, where he graduated M.D. in 1854. As medical officer of health for Birmingham Dr. Hill played a leading part in the general development of the health services, and in particular was actively associated in the promotion of a proper sewerage system, and in the Parliamentary campaign by which the town council acquired the control of water and gas supplies. The destruction of slums and the improvement of slum areas were actively pursued during his term of office. When in 1883 a dynamite factory was discovered on the premises of a supposed paper-hanger, it fell to Dr. Hill's lot to analyse the nitroglycerine, as well as to render it safe for removal and destruction. He was twice president of the Society of Public Analysts and also of the Society of Medical Officers of Health, was the author of many important reports to the local authority on sanitary matters, and contributed largely to the Transactions of the Society of Medical Officers of Health. Two of his sons followed him in public health work: Dr. A. Bostock Hill is consulting medical officer for Warwickshire and emeritus professor of hygiene and public health at Birmingham University, and Dr. T. Eustace Hill is medical officer of health for the county of Durham.

THE LATE DR. J. BRINDLEY-JAMES.—Dr. Joseph Brindley-James, who died on Feb. 20th, aged 73 years, was educated at Shrewsbury School and King's College, London, obtaining the qualifications of M.R.C.S. in 1876 and L.R.C.P. Irel. in 1894. He practised for 25 years at Hammersmith and Barnes, and was a member of the Barnes District Council. Dr. Brindley-James was the author of several works on medical topics, and took a great interest in the subject of reform in the management of the Royal College of Surgeons; he was an active worker in the Association of Members and its successor, the Society of Members, of which organisation he was President at the time of his death.

ROYAL SUSSEX COUNTY HOSPITAL: DEATH OF A GENEROUS BENEFACTOR.—Mrs. Stephen Ralli, a generous benefactor of this hospital, died on March 2nd, aged 83. Mrs. Ralli was the widow of Mr. Stephen Ralli; in 1904 she established a clinical research and bacteriological department at the hospital as a memorial to her husband, and in 1906 increased the endowment by a further gift of nearly £9000. Then in 1910 Mrs. Ralli settled on the Pathological Institute a further £5000 for the upkeep of the laboratory and its staff. Other hospitals also found in Mrs. Ralli a generous supporter and her loss will be deeply regretted.

Medical News.

UNIVERSITY OF OXFORD: *Litchfield Lecturer in Surgery.*—Edmund Cecil Bevers, B.M., M.A., F.R.C.S., has been appointed Litchfield Lecturer in Surgery, for two years from Jan. 5th, 1922, in succession to A. P. Dodds-Parker, B.M., M.A., F.R.C.S.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary Council meeting was held on March 9th, Sir Anthony Bowlby being in the chair.—A report was read from the Board of Examiners in Dental Surgery respecting candidates found qualified for the licence in dental surgery, and licences were granted to 65 candidates.—A report, dated Feb. 14th, from the committee of management regarding the draft rules of the General Medical Council for diplomas and degrees in public health was approved and adopted.—A report, dated Feb. 21st, from the committee of management on the draft recommendations of the General Medical Council in regard to professional examinations was approved and adopted.—A report, dated March 1st, was received from the committee of management submitting new regulations of the Conjoint Examining Board of England, setting forth a revised course of study and examination which it is proposed should be made applicable to candidates who have not passed the required preliminary examination in general education before Jan. 1st, 1923. As recommended by the committee of management, the new regulations of the Conjoint Board were approved provisionally.—A letter was read from Mr. F. G. Spencer, reporting his attendance as the representative of the College at the annual meeting on Feb. 23rd of the Central Council for District Nursing in London, and enclosing a copy of the seventh annual report of this Council. Mr. Spencer was thanked for his services.

At a meeting of the Council held on March 9th, Sir Anthony Bowlby, the President, in the chair, licences to practise dentistry were conferred upon 65 candidates (including two women) who have passed the requisite examinations and have complied with the necessary by-laws. The following are the names and schools of the successful candidates:—

H. K. Banks, Guy's; D. Barker, Royal Dental; A. G. R. Bench, London; E. C. Bevis, Guy's; I. Blain, Manchester; F. Brown, Birmingham; A. R. Churchyard, R. R. Course, and Cicely M. Cox-Moore, Royal Dental; G. Curle and A. B. Dancel, Guy's; G. S. Deighton, R. Dickinson, W. Downs, and V. E. B. Durant, Royal Dental; K. W. Eady and D. C. Eglington, Guy's; L. F. Elston, Royal Dental; Lilian Forbes, Univ. Coll.; C. A. R. Goonewardene, Royal Dental; L. G. Gray, G. G. T. Haynes, and L. G. Hemmings, Guy's; R. B. Hilton, S. A. Holford, and J. B. Hubbard, Royal Dental; R. Hughes, Guy's; R. L. Jenkins, Royal Dental; J. R. Keay, Birmingham; G. B. Kempster and R. V. Kenroy, Guy's; J. O. Knowles and L. S. Levien, Royal Dental; M. Lewis and S. Masey, Guy's; M. J. Matley-Moore, Birmingham; R. W. May, Royal Dental; S. P. Meacock, Guy's; H. A. L. Morris, Royal Dental; D. A. Parsons and C. M. A. Pauw, Guy's; J. E. Phillips, Royal Dental; P. Pienaar, Guy's; J. E. Pike, Royal Dental; J. F. Pilbeam, Guy's; H. E. Pow and J. B. Reed, Royal Dental; E. A. Reeve, London; J. D. P. Roberts and E. Samuels, Guy's; J. T. Sharp, Manchester; G. H. Smith, Guy's; G. R. Smith, Royal Dental; W. A. Strickland, Guy's; R. C. Taylor, Birmingham; A. Taylour, Royal Dental; P. G. Trafford, Guy's; G. F. Urwin and A. G. Vinsen, Royal Dental; P. J. Walters, Guy's; S. B. Warden, Bombay and Royal Dental; F. W. Watt, P. H. Williams, and T. L. Winn, Guy's; and E. L. Wyatt, Royal Dental.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following have been admitted (after examination) as Fellows of this Faculty: Edward Mitchell Erskine Cumming and Harold Kirkby Rowntree.

ROYAL INSTITUTION OF GREAT BRITAIN.—The Friday evening discourse next week, on March 24th, at 9 P.M., will be delivered by Prof. F. G. Donnan, F.R.S., on Auxiliary International Languages. On March 21st, at 3 P.M., Sir Arthur Keith, F.R.S., on Anthropological Problems of the British Empire: Series I.—Racial Problems in Asia and Australasia. (Lecture V.) On Thursday, March 23rd, at 3 P.M., Dr. P. Chalmers Mitchell, F.R.S., will give his second lecture on the Cinema as a Zoological Method. On March 25th, at 3 P.M., Sir Ernest Rutherford, F.R.S., Professor of Natural Philosophy, R.I., on Radioactivity.

LANCASHIRE ASYLUMS BOARD AND DR. LOMAX.—After discussion and consideration of a letter from the Ministry of Health, requesting the Asylums Board to appoint representatives to give evidence before the committee on March 15th into the administration of public mental hospitals, the Board decided that the following members of the Board should attend the inquiry: the chairman and vice-chairman, the chairman of the Prestwich Visiting Committee, and one other representative.

UNIVERSITY OF MANCHESTER.—The Council have appointed Mr. Arthur Lapworth, D.Sc., F.R.S., at present professor of organic chemistry in the University, to the Sir Samuel Hall chair of chemistry and to the directorship of the chemical laboratories, as from the beginning of the session 1922–23.

Manchester University Roll of Service.—This handsome volume contains the names of past and present members of the University, whether teachers, students, or officials, who served with the British Navy, Army, or Air Force, with the armed forces of the Overseas Dominions, or with the Allies during the war, together with names of women who served with Queen Mary's Auxiliary Corps or with similar organisations. Those who entered the University after demobilisation and not later than April, 1920, and those whose only connexion with the University consisted of membership of the University contingent of the Officers Training Corps, are also included. The obituary list contains 500 names and the general list 3675.

ROYAL SANITARY INSTITUTE.—The Council of the Royal Sanitary Institute have established an examination in tropical hygiene for inspectors, the syllabus of which has been prepared to cover their special duties, including the prevention of malaria and eradication of mosquitoes, the sanitation of native quarters, and the comprehension of tropical conditions in relation to health. The Association has received the general approval of the Colonial Office and the London School of Tropical Medicine. At first examinations are only being arranged in London, but in the near future they may be held also in colonial centres where the Institute's local board of examiners think desirable.

GERMAN LAW TO COMBAT VENEREAL DISEASES.—The Bill, as drafted 18 months ago has passed the Reichsrat with certain emendations. It makes statutory the obligation to undergo medical treatment, prohibition of advertisement of remedies in the press, compulsory notification, and under certain conditions compulsory removal to hospital. Intercourse by a person, wittingly infectious, becomes punishable by law, but in general the measure is based upon treatment and not punishment. The possession of a known infection on entering marriage is punishable. A Bavarian deputy, while expressing general agreement with the purpose of the Bill, refused his assent, as in its actual form the Bill would offend moral and religious susceptibilities in Bavaria.

SOUTHAMPTON DIVISION, B.M.A., AND REDUCTION OF SALARIES.—On March 9th a resolution was passed by the Southampton Division to the effect that, having considered the decision of the Borough District Council regarding reduction of salaries, the Division wished to point out that the assistant medical officers of health and school dentists received no war bonus, and that the reduction in their salaries will bring the emoluments of each of them below the minimum salary approved by the B.M.A., even for men newly qualified and therefore without practical experience; that there is no parallel in England for the step contemplated; that the attention of the Association will therefore be called to the local position, when the Association may refuse to advertise any vacancy that may occur; and that the action of the Council, if persisted in, will tend to reduce the efficiency of the public health service of Southampton, which has long been a distinguishing feature of the town.

NATIONAL LEAGUE FOR HEALTH, MATERNITY, AND CHILD WELFARE.—The annual report of this League for 1921 records steady progress in activities. The excess of expenditure over income amounted to £1145, but every effort is being made to place as many departments of the League as possible on a self-supporting basis. A generous grant from the Central Council for Infant and Child Welfare enabled the League to finance the Baby Week Exhibition without drawing on its own funds, and, moreover, the Council in providing accommodation for the League at Carnegie House, 117, Piccadilly, London, W. 1, has effected a considerable saving in rent. A tribute is paid to the work of Miss J. Halford, until recently secretary of the League, who will in future give her full time services in an honorary capacity. The educational departments of the League continue to develop, and the Infant Welfare Workers' Employment Bureau is of great utility to workers, though a considerable drop in the proportion of vacancies to applicants is recorded. A panel is about to be started of emergency children's nurses, who will be ready to fill a gap at short notice during school holidays or even during one day to suit the convenience of a mother in urgent need of temporary help. Brief reports of the year's work of the four homes for mothers and babies, for which the League is responsible, as well as of the ten important constituent sections of the League, together with a detailed balance-sheet, are included in a report of which the modest size must be regarded as a wise economy and in no way representative of the manifold and excellent activities of the League and its branches.

CENTRAL SCHOOL OF HYGIENE, LONDON.—The Committee appointed by the Minister of Health to advise as to the preliminary steps to be taken in regard to the site and planning of the School of Hygiene, which the Rockefeller Foundation have promised to provide, is composed of the following: Sir William Arthur Robinson, K.C.B., First Secretary, Ministry of Health (chairman); Sir Frank Baines, C.B.E., Director of Works, H.M. Office of Works; Dr. H. H. Dale, C.B.E., F.R.S., Head of Department of Biochemistry and Pharmacology under the Medical Research Council; Sir Walter Fletcher, K.B.E., M.D., F.R.S., Secretary, Medical Research Council; Sir William Leishman, K.C.M.G., F.R.S., Director of Pathology, Army Medical Service; Sir George Newman, K.C.B., M.D., Chief Medical Officer, Ministry of Health; Sir Cooper Perry, M.D., Principal Officer, University of London; Sir Herbert J. Read, K.C.M.G., Assistant Under-Secretary, Colonial Office; and Dr. H. Meredith Richards, Ministry of Health (secretary).

AMERICAN PEDIATRIC SOCIETY.—A preliminary programme of the thirty-fourth annual meeting, to be held on May 1st, 2nd, and 3rd at Wardman Park Hotel, Washington, D.C., has been issued. Important papers on many pathological conditions of childhood will be read, and problems of normal development and function will not be neglected. The Congress of American Physicians and Surgeons will synchronise with the meeting of the Pediatric Society. The first session on May 2nd will be devoted to the presidential address, and on May 3rd Dr. G. V. McCollum and Dr. L. B. Mendel will read papers on Some Aspects of the Physiology and Pathology of Nutrition.

ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, BRIGHTON.—In the fifty-third annual report of the Royal Alexandra Hospital for Sick Children at Brighton, submitted to the annual meeting on Feb. 27th, the inauguration of a contributory pension fund was announced. Mr. Modera, chairman of the committee, said he believed they were the first in the United Kingdom to adopt the scheme. The need for it had long been felt, especially in view of the fact that two, at least, of their sisters had most loyally served them for about 20 years. The hospital's contribution to the scheme would be paid from the income from a legacy. The hospital's expenditure for the year amounted to £7211 and the receipts £5734, showing a deficiency of £1477. Legacies received nearly totalled this deficiency, but the ordinary income does not approach the annual expenditure. Parents' contributions towards their children's maintenance brought in £907. In-patients during the year numbered 879, out-patients 1746, and the casualty cases 2263.

LORD MAYOR TRELOAR CRIPPLES' HOME.—A lecture was given on March 7th at the Wigmore Hall, London, W. 1, by Prof. Leonard Hill, on the Prevention and Cure of Tuberculosis, with special reference to the work carried on under the direction of Sir Henry Gauvain at the Lord Mayor Treloar Cripples' Home at Alton and Hayling Island. After comparing the widely differing death-rates from tuberculosis between members of a race salted to the infection and one meeting it for the first time, Dr. Hill described children under 5 as essentially an unsalted class, to whom tuberculosis was much more deadly than to older people. If a young child received small doses of infection the result would probably be small lesions which might actually vaccinate instead of causing injury, but a child exposed to massive infection ran a serious risk of going under; it was therefore necessary to separate children from massive infection such as might be found in the proximity of an actively tuberculous mother or teacher. While it was admitted that the bovine was a less dangerous organism than the human tubercle bacillus, it was the cause of many cases of surgical tubercle in children, and should be guarded against by procuring clean, germ-free milk. Of different classes of people, it was found that the clergy were the least liable to tuberculosis: agricultural labourers came next; factory workers such as printers, shoemakers, and cotton-spinners showing a much higher susceptibility. Coal-miners were particularly healthy, and there was no evidence that the inhalation of coal-dust was injurious. This might be contrasted with silica-dust, which produced marked degeneration of the lungs if breathed in large quantities, as in the case of tin-miners, granite and sandstone workers, and grinders. A number of excellent slides were shown, demonstrating the effect of exposure to sun and air on tuberculous lesions and on the general metabolism. Children at Hayling Island were able to enjoy bathing in the month of November, drying themselves by a coke stove set up on the shingle beach, and getting warm by the simple expedient of running about without any clothing. Though Sir Henry Gauvain preferred to speak cautiously of the disease as being arrested rather than cured, it was a fact, thought Prof. Hill, that the majority of his patients at Alton and Hayling Island remained healthy, even after returning to unsatisfactory conditions of life.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at the Royal Society of Medicine, 1, Wimpole-street, London, W.1, on Tuesday, March 21st, at 8.30 P.M., when Lord Dawson of Penn will open a debate on Professional Secrecy. Members are invited to introduce guests.

INTERNATIONAL COMMITTEE OF EXPERTS ON DISABLEMENT.—A meeting of this Committee, recently held at Geneva, was attended by representatives of organisations of ex-Service men and official bodies or departments concerned with disablement in Germany, Austria, France, Great Britain, Italy, and Poland, and by representatives of the health section of the League of Nations and of the League of Red Cross Societies. The Committee urged that, in the interests of those disabled in industry as well as in war, the experience gained in various countries in the spheres of prosthesis and orthopædics should be made more widely known. A single institution of an international character, which could collect and present information, and organise an international exhibition of artificial limbs and other orthopædic instruments, was proposed, which should be in close and continuous collaboration with existing organisations. The Committee invited the International Labour Office to take up the task of organising a travelling expedition which should be lent in turn to each of the national associations for disabled men. Until legislation concerning industrial accidents is amended to allow men disabled in industry to have the benefit of artificial limbs and orthopædic and medical treatment for an unlimited period, it was recommended that liaison should be established between departments dealing with the supply of limbs and instruments to ex-Service men on the one hand, and the social insurance organisations on the other.

GENERAL INFIRMARY, LEEDS.—The rearrangement of beds detailed in THE LANCET on July 30th, 1921, has been found to be attended with improved efficiency in the working of the hospital. One of the changes was the allocation of the three upper wards of the north pavilions for the accommodation of 112 children. Two of these wards are now in full occupation and the third will, it is hoped, also soon be in commission. The need for a special ward for the treatment of infants has become increasingly manifest, and plans have been passed for the building of an additional ward to accommodate 12 infants; these will be self-contained and will at the same time form a part of the children's department. Upwards of £5000 have been collected for the purpose.

STAFF RETIREMENT AGE AT BRISTOL HOSPITALS.—The governors of the Bristol General Hospital have approved an alteration in their rules by which all members of the honorary staff shall, as a matter of routine, retire at the age of 60. Heretofore the retiring age for physicians has been 65 and for surgeons 60. This alteration has been made at the request of the honorary staff, as part of a movement towards uniformity with the conditions of appointment at the Royal Infirmary. Here the rule used to be that surgeons should retire at 55 and physicians at 60. By raising the surgeon's age of retirement to 60 the limit has been made uniform for all members of the two staffs. This will remove one of the difficulties in the way of fusion of the two staffs, part of a policy of hospital union the advantages of which have recently been expounded at length by Mr. E. W. Hey Groves in the *Stethoscope*, the journal of the Bristol Medical School.

NATIONAL HEALTH INSURANCE IN IRELAND.—Last week the Provisional Government of Southern Ireland announced that owing to the many interests involved, and the injury which would result to insured sick persons by the non-recognition of the transfer, they had decided not to offer any further opposition to the transfer. This decision has much disturbed those interested in the management of the Approved Societies, and at a special general meeting of the Approved Societies' Association of Ireland, resolutions have been passed to the following effect: 1. That the Association protests against the action of the Provisional Government in agreeing with the Northern and British Governments to partition the National Health Insurance Service in Ireland, reiterates the opinions that the partition cannot be justified on legal, administrative, or actuarial grounds, is destructive of the interests of individual insured persons, and will lead to an increase in contributions or decrease in benefit, declares it detrimental to the interests of all Irish Approved Societies, and calls upon the Provisional Government to reconsider its decision. 2. That, as a protest against the handing over by the Irish Insurance Commissioners of funds in their possession to three trustees with a British treasury official as chairman, the Societies should claim the return of any money in the hands of the Commissioners and exercise their rights to reinvest the same by preference in the housing schemes of the working classes. 3. That the Government should be called upon to receive a deputation from the Association to hear the views of Approved Societies on the question.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 8TH.

Dental Fees.

Mr. SEDDON moved: "That an humble address be presented to His Majesty praying that the Order in Council under the Dentists Act, 1921, dated the 16th day of January, 1922, approving Regulations of the Dental Board of the United Kingdom, presented on the 7th day of February, may be annulled." He said he joined with Mr. Godfrey Locker-Lampson in protesting against a five-guinea charge. It was an imposition, and not a registration fee. He had reliable authority for doubting whether the medical, or any other profession, asked for such an imposition as five guineas for all time as far as these applicants were concerned. Many hundreds of ex-Service men belonged to this particular profession and the regulations had given rise to a very serious grievance on their part. The man who belonged to a particular society by mere virtue of his membership went on to the Register ipso facto, whereas other men who did not belong to that society must give the same evidence of five years' dental practice before the war and since the war as the other people who came under the Act. The greater number of the ex-Service men did not belong to that society. He asked the Minister of Health to withdraw the Regulations and to see to it that not merely membership of an organisation was going to be the talisman to go on the Register. Equality of treatment should be given to ex-Service men irrespective of the organisations they belonged to.

Captain LOSEBY seconded. He said that he believed that the country hardly realised the extent to which professional and semi-professional men who served in the war had been penalised through that service as compared with men who did not undergo those sacrifices.

Mr. RAFFAN said he was in agreement with the thesis that special regard should be had to the position of ex-Service men under these Regulations, but he was not in sympathy with his hon. friend in attacking the Dentists Act and in endeavouring to secure a verdict which he had failed to get when the Bill was passing through committee.

Mr. ACLAND, chairman of the Dental Board, said that up to the present not one single applicant had been refused and there were dozens of cases to be decided at the next meeting of the Registration Committee. The annulling of the Regulations would have no effect on the case put forward by the hon. Member at all. In these Regulations there was nothing with which the ex-Service men had to comply. The House ought to believe that the Dental Board was going to carry out its duty with every possible consideration for ex-Service men who could be in any way brought within the general policy of safety to the public. He had conferred with the Examination Committee and they said that they would have every disposition, if there was anything like a decent standard of ability shown, to let these men in. As regarded the fee, they knew quite well, and admitted that it was high, but if they found after a few years that they had enough money to give sufficient help to education and scholarships, it might be possible to reduce the fee from £5 to £3 or £2.

Sir A. MOND, Minister of Health, said he had no complaint from any organisation or dentist about the Regulations. Nor had he had any representation from any ex-Service men's organisation. A dentist's practice was a fairly lucrative business, as he understood it, and £5 was not in itself an abnormal sum. The Board were authorised by the Act to raise funds for the purpose of dental education, which was of particular interest to the Labour Party, so that the dental service might be replenished and that all classes might enter the profession. Naturally and rightly this new organisation wanted to have an office. In a couple of years the matter should be reconsidered, when it would probably be found that a lower fee would suffice.

Mr. ACLAND said that the Dental Board would follow the suggestion of the Minister of Health and bring the matter up for reconsideration after two years.

The motion was withdrawn.

Welsh Health Inspectors.

Mr. RAPER asked the Minister of Health whether applications were being invited for the post of inspectors under the Welsh Board of Health; whether ability to speak Welsh was essential; and whether, seeing that some difficulty had previously been experienced in filling such posts, he would extend the age limits beyond those advertised in the case of ex-Service men in all other respects considered suitable.—Sir A. MOND replied: Applications have been invited for a few posts of assistant inspector on the outdoor staff of the Welsh Board of Health, and, on account of the nature of the work of these officers, candidates must satisfy the Civil Service Commissioners of their ability to speak the Welsh language. There would appear to be no necessity to extend the age limits beyond those advertised, as sufficient applications are available to fill all the vacancies. In this connexion I would remind the hon. Member that ex-Service men who are otherwise eligible and who have served in the Navy, Army, or Air Force between August 4th, 1914, and Nov. 11th, 1918, may deduct from their actual age any period of service between August 4th, 1914, and Dec. 31st, 1919.

Notification of Leprosy.

Colonel Sir CHARLES YATE asked the Minister of Health whether, considering that the cases of leprosy in this country were reported to have been contracted abroad, and that there was no definite information as to the number of these cases, he would consider the question of making the disease notifiable.—Sir A. MOND replied: This question has been carefully considered from time to time, but I am not at present satisfied that there is sufficient justification for making this disease notifiable.

Roads and the Public Health.

Mr. WALTER HALLS asked the Minister of Health whether he received a petition signed by a very large number of the residents in the Whitefield district, near Manchester, including the medical officer of health and several other doctors, complaining of the condition of several roads, and if the same was handed over to the Minister of Transport who now declined to deal with it; and, in view of the statement by the signatories that these roads were not only impassable at times but were a menace to the health of the people, especially little children going to school, would he now take steps to see that they were attended to at once.—Sir A. MOND replied: I received the petition and forwarded it to the Ministry of Transport, who have had the matter investigated. The roads in question are not highways repairable by the inhabitants at large, but I am sending a copy of the hon. Member's question to the district council for their observations.

Milk-Supply for the Coming Summer.

Lieut.-Colonel BELL asked the Minister of Agriculture if his attention had been called to the very serious state of affairs that had arisen in the milk-producing districts owing to the great reduction in the contracts of the dairy companies for the coming summer, and whether his department had any policy to meet the critical situation that would arise.—Sir A. BOSCAWEN replied: I am informed that in making contracts for the summer wholesale milk dealers are proceeding much more cautiously than usual. The Ministry has for some time past encouraged local education authorities to provide technical instruction and advice for the purpose of enabling farmers to adopt other means besides immediate sale for disposing of their milk. It is, however, obviously not within the Ministry's power to prevent large fluctuations in demand and prices, or seriously to modify their economic effects.

Treatment of Deaf Ex-Service Men.

Mr. ALFRED T. DAVIE asked the Minister of Pensions what arrangements had been made for ex-Service men rendered deaf during the recent war; what was the number receiving treatment and financial benefits; whether he was aware that Earl Haig was making public appeals and that collections were being made nightly in places of amusement in the London area to aid in the treatment and care of ex-Service men suffering from such deafness; whether the position of such ex-Service men had been considered; and what were the results.—Mr. MACPHERSON replied: Ear affections are pensionable under the Royal Warrant according to the degree of disablement found to exist, the rate of 70 per cent. being fixed for complete deafness. In addition, skilled medical and surgical treatment appropriate to the individual circumstances is provided in ear hospitals or at special aural clinics established by my department. At the present time approximately 5500 men are receiving treatment for some form of aural disease, and those who are prevented by their treatment from working are drawing the usual allowances. Facilities for acquiring proficiency in lip-reading are also provided in suitable cases. I have no information as regards the public appeals referred to.

Clearing Houses for Hospital Patients.

Mr. ALFRED T. DAVIES asked the Minister of Pensions on what date it was hoped to have established the proposed clearing houses for patients seeking admission to hospitals: on what date the proposed new clinics would be established and at work; and what arrangements had already been made or contemplated in connexion with these clearing houses and clinics.—Mr. MACPHERSON replied: The clearing house system has been in actual working operation in all regions for some time past. It is proposed to establish 160 general clinics, 56 of which are at present in process of being set up in some of the larger towns. The remainder will be proceeded with as rapidly as possible.

THURSDAY, MARCH 9TH.

Morphia Licences in Great Britain.

Mr. GILBERT asked the Secretary for the Home Department what was the form of licence issued under the Dangerous Drugs Act, 1920, permitting the manufacture of morphia in Great Britain; how many premises and persons had been licensed for such manufacture; what was the amount of British made morphia exported during the year 1921; and to what countries was it consigned.—Mr. SHORTT replied: The form of licence is an authorisation to carry on the manufacture of morphia at certain premises specified in the licence and subject to certain conditions. The conditions are not necessarily the same in each case, but, in general, they provide for adequate supervision, exclusion of unauthorised persons, keeping of records of production, and the like. The number of firms and premises licensed is three. The amount of British-made morphia exported during 1921, as shown in the Customs returns, was 81,098 oz., but this does not include the amount exported through the parcel post. The total amount of morphia licensed for export, including export by post, was 112,681 oz. Morphia is exported to all parts of the world, but over one-half of the amount shown in the Customs returns went to France. Other countries which received more than 5000 oz. were Sweden, Belgium, and Canada.

The Orthopædic Hospital at Shepherd's Bush.

Sir H. FOREMAN asked the Minister of Pensions whether he was aware that the time for vacating the Orthopædic Hospital at Shepherd's Bush was drawing near. Could he report whether fresh negotiations had been entered into with the guardians on the question of rent. If not, was he prepared to facilitate these negotiations by withdrawing the expression blackmail which he used in a reply to a question on this subject some days ago.—Major TRYON replied: My right hon. friend is willing to withdraw any expression of his provided he is assured that the State will have the opportunity of continuing to maintain its disabled men in this hospital at a fair and reasonable rent. He is still prepared to stand by the offer of an increased rent which he has already made, and in order to avoid any possible doubt he has so informed the guardians.

MONDAY, MARCH 13TH.

MINISTRY OF HEALTH VOTE.

On a vote of £9,000,000 for the Ministry of Health,

Mr. CLYNES moved to reduce the vote by £100. He complained of the non-fulfilment of the promises and assurances given in the House by the Prime Minister in regard to housing and said that such conditions of overcrowding as existed in the country brought their social and physical effects in many ways, and the community finally had to pay in reduced standard of health, in reduced efficiency, in higher doctors' bills, and in the deepening of the sense of social discontent.

Mr. G. ROBERTS said he observed in the Estimates a reduction under the heading "Grant for the Welfare of the Blind" of £20,000 on last year's estimate. If that reduction meant that they were going to arrest or to end the work now being done for the blind it would not only be false economy but contrary to humane ideals. There were 34,894 blind persons under the control of the Ministry of Health and of these 17,228 were returned as unemployable. He urged that even in these days of extreme stringency they ought to develop their plans for the treatment of the blind. Of the 34,894 blind persons 1383 were mentally defective. Of 1000 blind persons 40 were mentally defective, whereas among the ordinary population the figure was only 8 per 1000. He was presiding over a committee which was inquiring into the causes of blindness and defective vision and they had ascertained that a good deal of blindness was preventable. Anything that would result in reducing the efforts to prevent blindness among children would be false economy and not a humane consideration.

Viscountess ASTOR said that housing was at the bottom of a great many ills both physical and moral, and the nation which did not face up to these things in a national way was failing lamentably.

Sir F. BANBURY said they were under a deep debt of gratitude to the Minister of Health, who, during the few months since he succeeded to that office, had endeavoured to put his department on a business-like footing and to reconcile his expenditure with his means.

Mr. EVANS urged that the Minister of Health should be cautious in his economies, especially in regard to expenditure on tuberculosis. At the present time there was very urgent need for a hospital in Wales for the treatment of that disease, and the Welsh National Memorial Association was able to acquire a house called St. Bride's in Pembrokeshire, the residence of Lord Kensington, for a very small sum—about £10,500. He hoped that the Minister would press upon the Treasury for a full grant in this case, otherwise Wales would be penalised for having pursued a business-like method, and the effort which was being made in Wales to cope with tuberculosis would be very considerably interfered with.

Mr. G. LOCKER-LAMPSON said the Geddes Committee only recommended a reduction of between £2,000,000 and £3,000,000 in the Ministry of Health Vote, but the actual reduction which was being made was about £1,600,000. He did not think it was quite fair that the chairman should have been appointed for another four years to the Welsh Board of Health whose abolition was actually recommended by the Geddes Committee. He suggested that men in H.M. forces who were insured persons should leave Health Insurance when they joined the forces and on their discharge be re-admitted to the Health Insurance scheme. Another method of securing economy would be to accept the recommendation that the Unemployment and Health Insurance machinery should be amalgamated.

The Minister's Statement.

Sir A. MOND, Minister of Health said that at the present time they were only in a position to keep going those services which were already running. He did not wish any health service to go back, and he thought that in spite of the reductions to be found in the estimates he could promise that that would be the case. Very good reasons could be adduced why they had not decided to abolish the Welsh Board of Health. He quite agreed with Mr. Roberts about the value of the work done for the blind, but they had found that 1921–22 estimates were not expended. Therefore, for the next year they had taken the sum which was actually expended so as to enable the existing services to go on and postponing till a later date services which might become necessary following the report of the Committee on which Mr. Roberts was sitting. He was personally looking into the case of the additional hospital accommodation for tuberculosis treatment in South Wales raised by Mr. Evans. So far as he had any influence he would be glad to see it carried out and the opportunity taken to secure a very fine building to start a surgical tuberculosis hospital. So far as money was available they were anxious to develop that side of the work. As regards the question of housing, there had been a big drop in the demand for houses and the figures originally put forward did not hold good to-day. The figures published by the Geddes Committee as to the financial loss have been very carefully worked out by the Ministry of Health and they stood by those figures. As to the Government's policy in the future he was not in a position to say anything. They had commenced 150,000 houses. On March 1st 91,000 were completed. The number of houses authorised but not yet started was 20,000, and nearly 5000 were not yet allocated. Altogether local authorities and private builders had completed 119,000 houses. They had still to build 59,000 local authority houses and 14,500 private builders' houses. There were 25,000 houses still to be started and 98,000 houses to complete. The slum question ought, as far as possible, to be dealt with separately from the housing question. Local authorities should use their powers for the repair of individual houses. The reports of the medical officers of health for 1920 showed that 1500 local authorities had been working on schemes, and of 6,600,000 houses of all classes over 1,000,000 were inspected, 271,000 were found unfit for human habitation, and 180,000 were made fit. In addition, 30,000 notices were served under the Housing Act, 1919, resulting in 19,000 houses being repaired by owners and 801 by local authorities. In 425 cases closure orders became operative. Notices requiring repairs to be done were served to the number of 254,000, and these resulted in the repair of 218,000 houses by owners and 1900 by local authorities.

Medical Referees.

Mr. JOHNSTONE said that so far as he could judge the Minister had only reduced the number of medical referees by 2—from 30 this year to 28 next year. The Geddes Committee said that these medical referees were a luxury that ought to be given up at once and where the engagements of the medical men could not be terminated they should be transferred to other departments, and that the Approved Societies should themselves provide for the medical referees. He did not know what influences might have been brought to bear on this matter, but he certainly did not think sufficient thought was given to the matter when this medical referee system was set up. He should like the Minister to consider the matter, as he felt from his own knowledge and experience of National Insurance work that it could be efficiently done if properly organised by Insurance Committees, and that there was no need for a State service of this kind.

Milk-Supply.

Mr. MYERS said there was no more important service in the country from a public health point of view at the present

time than the milk-supply. He desired to call the particular attention of the department to the very extensive sale in this country of milk below the standard quality. He urged that this matter merited more attention than it had received. A drastic change was now contemplated in regard to the assistance given to expectant and nursing mothers. It was proposed to abandon the granting of milk to children and nursing mothers, and the local authorities were being asked to estimate the expenditure that would be incurred during the year 1922–23 in supplying a midday meal to expectant and nursing mothers. If this was attempted it would break down. He regretted to find for the coming year a reduction of £359,000 in respect of tuberculosis. On the other side, there was a new item of £175,000 for the provision of sanatoria, reducing the sum to just under £200,000. They could not afford to cut this department to that extent.

Venereal Disease and Tuberculosis.

Lieut.-Colonel FREMANTLE said he hoped that the Minister of Health would see his way to get some reconciliation between the two bodies dealing with venereal disease. He knew he had tried for some time and had been unable to get the doctors, and still less the other people associated with the doctors, to agree, but he hoped that possibly he might be able to inspire some kind of agreement between the two, some kind of round table conference, in order that these two bodies, engaged in a subject of vital importance and interest, both from the point of view of efficiency of the nation and of philanthropy and humanity, might be able to get to work on common lines without inflicting greater moral injuries than those which they sought to prevent. He wished to raise the question of the future appointment of medical officers of health. The report of the Ministry last year showed that a county medical officer of health might not engage in private practice and might not hold other offices without the consent of the Ministry. Opinion was divided amongst medical officers of health on the subject, but in his own county of Hertfordshire, where he had colleagues, both whole-time men serving some districts and private practitioners serving as medical officers of health and school medical officers in other districts, his own experience was that one district was as well served as another. Each system had its great advantages, but the main thing was the actual personality and will of the man himself, and to get a man keen on doing his work and interested in it. But the ideal thing of all was for a county community to be served by the general practitioner of the old-fashioned sort which they read of in novels, and he was glad to say with whom they met very frequently in ordinary life. When was the Minister of Health going to be able to get the further consideration of health measures in relationship to the Poor-law and the other departments that dealt with public health measures? He believed that the foundation of public health should be for the Poor-law medical officer to assist the Government in its ordinary work of public health. It was not so at present, because hitherto the ordinary education of the ordinary medical man in this country had not included any practical work in public health. The curriculum of his education had not been improved to meet new conditions. The General Medical Council could quite well supervise and rearrange the curriculum, and at present the Council had this matter under consideration. The General Medical Council was under the Privy Council and the Minister of Health was the one official who should speak to the Privy Council on the subject of what was required for his department. He hoped that the Minister of Health would look personally into this matter.

Lieut.-Colonel NATHAN RAW congratulated the Minister of Health on the excellent provision he had made for the vital services with which he was concerned. He hoped when financial conditions improved the Minister would be able to devote more money to the valuable work of maternity and child welfare. He regretted that the expenditure on the treatment of tuberculosis had been somewhat reduced. The eradication of tuberculosis was a national concern, and he hoped that next year a very much larger sum would be devoted to it. He did not think a penny of the money spent was wasted, but a great amount of the effort and money was wasted because the work was not continued. He pressed the importance of training in sanatoria and of providing tuberculosis colonies. They were losing 60,000 people every year from this disease alone and, therefore, on economic grounds only it was well worth not only to spend £1,000,000, but £2,000,000 in the prevention and treatment of tuberculosis.

Sir WATSON CHEYNE said as regarded the two societies connected with the combating of venereal disease, he could see very little difference between them. He could not understand the antagonism. It was only a question of the time of disinfection, a very small point of no importance. Both societies were doing well and might well be combined. As regarded tuberculosis, it would be much better if they could prevent the virus getting into the patient. If they wanted to prevent infection segregation of the patient was the really logical method of treatment. Here they could realise the great value of sanatoria. He could never understand why stronger measures were not taken against infection from tuberculous milk. The time had come when something should be done definitely to prevent this source of infection. Evidently an agitation was beginning to prevent the Minister of Health bringing in another Milk Bill.

Sir A. Mond's Reply.

Sir A. MOND, in winding up the debate, said that nothing would give him greater pleasure than to help to make the societies dealing with venereal disease combine. He was endeavouring to obtain the assistance of the Medical Consultative Council and Lord Dawson to get together a body of medical men who would look at the subject from the technical point of view and advise him upon it. But they must not overlook the fact that there was a moral aspect of the question, and on that point he would never be a party officially to some of the propaganda which was being carried on. It was revolting and was probably doing more harm than good. That was not a question for medical men, but one for which they must take responsibility as citizens.

The motion to reduce the vote was rejected by 156 votes to 52, and the vote was then agreed to.

Foot-and-Mouth Disease and Liquid Milk-Supplies.

Mr. TOWNLEY asked the Minister of Agriculture whether he had now had an opportunity of perusing the statement issued by a firm of condensed milk manufacturers which suggested that the outbreak of foot-and-mouth disease had rendered liquid milk-supplies unsafe, and whether any information that had come into his possession before or since the outbreak warranted the suggestion.—Sir A. GRIFFITH-BOSCAWEN replied: The reply to the first part of the question is in the affirmative. With regard to the latter part I have no information which in any way warrants the suggestion that milk-supplies have been rendered unsafe for human consumption through the outbreak of foot-and-mouth disease.

Restriction of Poison Sales.

Sir ROBERT CLOUGH asked the Secretary for the Home Department whether his attention had been called to the number of crimes in which the use of poison was involved, and whether the law regulating the sale of poisons was sufficiently strong at present to restrict all improper sales.—Mr. SHORTT: I believe that the use of poison for a criminal purpose has always been of rare occurrence in this country, and, notwithstanding two or three recent cases, I do not think it can be alleged that it has become commoner than it used to be. I doubt if it is possible by law to ensure that there will be no improper sales, especially in the case of poisonous substances that are commonly used for legitimate purposes, but the matter is receiving consideration.

Shepherd's Bush Orthopædic Hospital.

Captain BOWYER asked the Minister of Pensions whether he had now been able to come to some arrangement with the board of guardians, Hammersmith, in order that the Orthopædic Hospital, Shepherd's Bush, should remain as a hospital for disabled men.—Mr. PENNEFATHER asked the Minister of Pensions if his attention had been drawn to a statement published on March 3rd by the consulting physician to the Shepherd's Bush Hospital for ex-Service men to the effect that, owing to a difference between the Ministry and the guardians as to rent, it was proposed to remove the patients to huts, and that the surgical staff were unanimously of opinion that such removal would be detrimental to the patients; if so, would he say what net saving would be effected if these removals were made, and if he would consider, in any case, whether the difference with the guardians in regard to rent could be adjusted by arbitration and the disadvantages of removal avoided.—Major TRYON replied: My right hon. friend intimated to the guardians that his offer of an increased rent of £12,000 a year for these premises is still open. He has also intimated his willingness that the views of the Ministry should be explained at a conference with the guardians at which he would welcome the presence of a representative of the Ministry of Health.

Pensions for Tuberculous Patients.

Mr. FREDERICK ROBERTS asked the Minister of Pensions whether any arrangements had been made for the payment of special pensions to pensioners who had undergone treatment in a sanatorium for tuberculosis; and, if so, what were the conditions under which such pensions were payable.—Mr. MACPHERSON replied: Men who, on conclusion of treatment in a sanatorium, undergo a prescribed course of extended treatment combined with training in a training colony, are awarded pension at the 100 per cent. rate for six months from the date of leaving the colony, and subsequently at not less than the 50 per cent. rate for a further period of two years. These awards are conditional on the pensioner attending for medical examination when so

required, and on his carrying out any further treatment recommended.

TUESDAY, MARCH 14TH.

Establishment of the R.A.M.C.

Mr. GODFREY LOCKER-LAMPSON asked the Secretary for War what was the present establishment of the Royal Army Medical Corps.—Sir L. WORTHINGTON-EVANS replied: The present strength of the Royal Army Medical Corps is 1321 officers and 4990 other ranks. The establishment estimated as being required for April 1st, 1923, is 1045 officers and 4516 other ranks.

Coroners' Juries and Viewing the Body.

Mr. RENDALL asked the Secretary for the Home Department whether he would consider, when drafting the Coroners Bill he had promised to introduce, the insertion therein of a clause making the viewing of the dead body optional at the discretion of the coroner and not compulsory, as at present.—Mr. SHORTT replied: I will consider the proposal to make the view by the jury optional, except in cases where the coroner considers the jury should view. There are strong reasons for requiring view by the coroner. The whole question will be carefully considered before any provision on the subject is introduced.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, March 21st.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Tuesday, March 21st.

PATHOLOGY: at 8.30 P.M.
At the Bland-Sutton Institute of Pathology, Middlesex Hospital, W. 1.
Communications:
Dr. E. C. Dodds: The Diastase Reaction in Rickets.
Dr. P. Lazarus-Barlow, Dr. Warwick James, and Prof. J. McIntosh: An Investigation into the Origin of Dental Caries.
Prof. J. McIntosh: Some Observations on Influenza and Gastric Influenza.
Demonstration of Pathological Specimens:
(*a*) Fœtal Endocarditis.
(*b*) Osteitis Fibrosa.
(*c*) Hypopituitarism.
(*d*) Osteo-sarcoma of the Uterus.
(*e*) Carcinoma of Hypophyseal Duct.

Wednesday, March 22nd.

SURGERY: SUB-SECTION OF PROCTOLOGY: at 5 P.M.
Discussion on the After-results of Colectomy (partial and complete) performed for Colon Stasis, to be opened by Sir Berkeley Moynihan, Sir Arthur Keith, and Dr. Arthur F. Hurst. The following will take part in the discussion: Dr. Victor Pauchet of Paris (by invitation), Sir W. Arbuthnot Lane, Mr. W. E. Miles, Mr. J. P. Lockhart-Mummery, and Mr. Hamilton Drummond.
Others desiring to take part in the discussion should communicate without delay with Mr. Græme Anderson, 75, Harley-street, W. 1.

MEDICINE. SURGERY.
Members of these Sections are cordially invited to attend the above meeting.
The Annual Dinner of the Sub-Section will be held after the meeting, at 8.15 P.M., at Oddenino's Restaurant, 60, Regent-street, W. The price of the dinner is 13*s.* 6*d.* (exclusive of wine), payable at the table. Will members intending to dine please send in their names to Mr. Græme Anderson, 75, Harley-street, W.
It is hoped that members will bring guests.

Friday, March 24th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Cases will be shown.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Dr. John Brownlee and Dr. Matthew Young: The Epidemiology of Summer Diarrhœa.

LONDON DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.
TUESDAY, March 21st.—4.30 P.M., Agenda: Pathological Specimens and Cases sent for Consultation. Clinical Cases: Dr. J. L. Bunch, Dr. Eva White, Dr. Dennis Vinrace, Dr. W. K. Sibley, Dr. S. R. Kapoor, Dr. W. Griffith.

HARVEIAN SOCIETY OF LONDON, Town Hall, Paddington Green, W.
THURSDAY, March 23rd.—8.30 P.M., Mr. Aleck Bourne: Albuminuria in Pregnancy. Dr. Mackenzie Wallis, Dr. Morley Fletcher, Dr. Amand Routh, and Dr. Simms will take part in the discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.
TUESDAY, March 21st.—5 P.M., First Goulstonian Lecture: Dr. A. Feiling: On the Interpretation of Symptoms in Diseases of the Central Nervous System.
THURSDAY.—5 P.M., Second Goulstonian Lecture.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, March 20th.—2 P.M., Mr. Addison: Surgical Wards. 2.30 P.M., Dr. Saunders: Medical Wards.
TUESDAY.—2 P.M., Mr. Banks-Davis: Diseases of Nose, Throat, and Ear. Dr. Pernet: Skin Department.
WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Bishop Harman: Eye Department.
FRIDAY.—2.30 P.M., Dr. Pritchard: Medical Wards. Mr. Tyrrell Gray: Surgical Wards.
SATURDAY.—2 P.M., Dr. Owen: Medical Out-patients. Mr. Simmonds: Surgical Out-patients.
Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
THURSDAY, March 23rd.—(At St. James' Municipal Hospital, Ouseley-road, Balham), 4 P.M., Mr. L. G. Phillips: Diagnosis and Treatment of Difficult Cases of Irregular Menstruation.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, March 20th.—5.30 P.M., Dr. Parsons-Smith: The Slow Pulse.
Daily:—10 A.M. and 2 P.M., Out-patients and In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC POST-GRADUATE COURSES, Queen-square, W.C.
MONDAY, March 20th.—12 noon, Dr. Greenfield: Tumours of the Brain and Spinal Cord. 2 P.M., Dr. Hinds Howell: Out-patient Clinic.
TUESDAY.—2 P.M., Dr. Grainger Stewart: Out-patient Clinic. 3.30 P.M., Dr. Saunders: Myasthenia Gravis.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Disorders of the Pituitary Body.
FRIDAY.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Demonstration of Fraenkel's Exercises. In Exercise Room.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, March 23rd.—4 P.M., Dr. P. G. Doyne: Amaurosis in Infants (Cases).

CANCER HOSPITAL, Fulham-road, S.W.
TUESDAY, March 21st.—4 P.M., Mr. Cecil Joll: Tumours of the Thyroid Gland.
FRIDAY.—4 P.M., Dr. Wyard: The Treatment of Inoperable Cancer.

BRITISH MEDICAL ASSOCIATION (CHESTERFIELD BRANCH) POST-GRADUATE COURSES.
FRIDAY, March 24th.—(At Chesterfield Royal Hospital Board Room) 2.30 P.M., Prof. Phillips: Puerperal Pyrexia. 3.15 P.M., Dr. Nutt: Radiography of the Chest.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, March 21st.—4.30 P.M., Dr. A. E. Barclay: Recent Advances in X Ray Treatment.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.
THURSDAY, March 23rd.—4.30 P.M., Dr. A. C. Magian: Contracted Pelvis.

SALFORD ROYAL HOSPITAL.
THURSDAY, March 23rd.—4.30 P.M., Dr. Jenkins: The Scope of Vaccine Therapy.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
Lectures on Tuberculosis and Public Health.
WEDNESDAY, March 22nd.—4 P.M., Mr. A. J. Morland: The Helio-Alpine Treatment of Surgical Tuberculosis.

PEOPLE'S LEAGUE OF HEALTH, Royal Society of Arts, John-street, London, W.C. 2.
Course of Lectures on the Mind and What We Ought to Know About It.
MONDAY, March 20th.—6 P.M., Sir Maurice Craig: Habit, and Adaptation.

HARVEIAN SOCIETY.—A meeting of this society will be held at Paddington Town Hall, Harrow-road, on Thursday, March 23rd, at 8.30 P.M., when a discussion on Albuminuria in Pregnancy will be opened by Mr. Aleck Bourne, followed by Dr. Mackenzie Wallis, Dr. Morley Fletcher, Dr. Amand Routh, and Dr. Simms.

Appointments.

BAILEY, H., F.R.C.S. Eng., has been appointed Surgical Registrar at the London Hospital.

GARVIE, BEATRICE, L.R.C.P. & S. Edin., L.R.F.P.S.G., Assistant Medical Officer of Health for Islington.

HAY, ISABELLA M., M.B., Ch.B., Junior Resident Medical Officer to the Children's Hospital in connexion with the Royal Infirmary, Sunderland.

JACKSON, J. L., M.B., Ch.B., Medical Superintendent, Knowle Mental Hospital, Fareham, Hants.

WORDLEY, E., M.B., B.C. Camb., M.R.C.P. Lond., Hon. Pathologist to South Devon and E. Cornwall Hospital, Plymouth.

Royal Northern Hospital, Holloway: REYNELL, W. R., M.D. Oxf., M.R.C.P. Lond., Physician (with charge of Out-patients); BROADBRIDGE, H. G., M.B., B.S. Lond., Anæsthetist.

Certifying Surgeons under the Factory and Workshop Acts:—Foss, R. S., M.B., B.S. Lond. (Woking); CLEMENTS, G. L., L.R.C.P. Lond., M.R.C.S. (Yaxley); WORSLEY, R. C., L.R.C.P. Lond., M.R.C.S. (Topsham).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University and North of Scotland College of Agriculture.—Head of Biochemical Department. £700.

Ashton-under-Lyne District Infirmary.—Res. Surg. O. £250.

Bedford County Hospital.—H.S. £200.

Birkenhead and Wirral Children's Hospital.—Hon. Phys.

Birkenhead Borough Hospital.—Hon. P.

Birmingham, Children's Hospital.—P. to Out-patients. £40.

Birmingham Union.—Dist. M.O., &c. £700.

Bridgwater Hospital.—H.S. £150.

Brighton, Royal Alexandra Hospital for Sick Children.—Hon. Surg. and Asst. Surg.

Bristol City and County.—Asst. Tuberc. O. £512.

Bristol Royal Infirmary.—Surg. and Asst. Surg.

Buxton, Derbyshire, Devonshire Hospital.—H.P. £250.

Cambridge County Mental Hospital, Fulbourn.—Two Asst. M.O.'s. Each £220.

Central London Ophthalmic Hospital, Judd-street.—H.S. £100.

City of London Hospital for Diseases of Chest, Victoria Park.—Asst. M.O. £100.

Colchester, Essex County Hospital.—H.S. £200.

Derbyshire Hospital for Sick Children.—Res. M.O. £150.

Dorset Mental Hospital, near Dorchester.—Third Asst. M.O. £300.

Durham County Hospital.—H.S. £200.

East Ham County Borough.—Female Asst. M.O. £500.

East London Hospital for Children, &c., Shadwell, E.—Cas. O. £120.

Exeter, Royal Devon and Exeter Hospital.—H.P. £150.

Fareham, Hants, Knowle Mental Hospital.—Sen. Asst. M.O. £550.

Folkestone, Royal Victoria Hospital.—Res. M.O. £150.

Gloucestershire Royal Infirmary.—Asst. H.S. £150.

Great Yarmouth Hospital.—H.S. £200.

Hospital for Sick Children, Great Ormond-street, W.C.—P.

Hull Royal Infirmary.—Sen. H.S. £200.

Inverness District Asylum.—Sen. Asst. M.O. £400.

Kensington, Fulham, and Chelsea Hospital, Earl's Court.—Hon. Dental Surg. Hon. P.

Leeds City.—Asst. M.O. for Maternity and Child Welfare. £500.

Liverpool, West Derby Union.—Asst. Res. M.O. £250.

London Temperance Hospital, Hamsptead-road, N.W.—Res. M.O. £200.

Manchester, Ancoats Hospital.—H.P. £200. Also Anæsth. 10s. 6d. per attendance.

Manchester Babies' Hospital, Levenshulme.—Res. M.O. £150.

Manchester, Baguley Sanatorium.—Third Asst. M.O. £300.

Manchester, Prestwich County Asylum.—Asst. M.O. £484 18s.

Norwich City.—Asst. M.O. £42 per month.

Nuneaton Borough.—M.O.H. £700.

Port Elizabeth Municipality.—M.O.H. £900.

Preston and County of Lancaster Royal Infirmary.—Res. Surg. O. £250. H.S. £200.

Prince of Wales's General Hospital, Tottenham.—H.P. and H.S. £200 each. Jun. H.P. and H.S. £120 each.

Putney Hospital (Chester Bequest), Lower Common, S.W.—Res. M.O. £150.

Queen Mary's Hospital, Stratford.—H.P. £150.

Rampton State Institution for Mental Defectives, near Retford.—Asst. M.O. £300.

Reading, Royal Berkshire Hospital.—H.P. £200.

Rotherham Hospital.—Jun. H.S. £150.

Royal Chest Hospital, City-road, E.C.—H.P. £120.

Royal Northern Hospital, Holloway, N.—H.P. £150. Also Anæsth. £10 10s. Pathologist. £300. Asst. Path. £300. Asst. Path. £400. Radiologist. £250.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. £100.

St. Peter's Hospital for Stone, Henrietta-street, W.C.—Jun. H.S. £75.

Seamen's Hospital, Albert Dock, E.—H.S. £150.

Sheffield Royal Infirmary.—Anæsth.

South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—Jun. H.S. £150.

Throat Hospital, Golden-square, W.—Hon. Surg. Reg.

West Bromwich and District Hospital.—Res Asst. H.S. £200.

West End Hospital for Nervous Diseases, Gloucester Gate.—H.P. £100.

Western Ophthalmic Hospital, Marylebone-road.—Non-Res. H.S. £150.

West London Hospital, Hammersmith-road.—H.P. Two H.S.'s. Each £100.

Westminster Hospital, Broad Sanctuary.—Asst. H.P. Asst. H.S. Each £52.

Whalley, near Blackburn, Calderstones Certified Institution for Mental Defectives.—Jun. A.M.O. £484.

Woolwich Union Infirmary, Plumstead High-street, S.E.—Asst. M.O. £350.

Zanzibar.—Asst. M.O.H. £600.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointments: Friockheim (Forfar) and Huntingdon.

Births, Marriages, and Deaths.

BIRTHS.

CLARK-KENNEDY.—On Feb. 27th, the wife of A. E. Clark-Kennedy, M.R.C.P., of Corpus Christi College, Cambridge, of a son.

POWER.—On Feb. 23rd, at Alexandria, the wife of Squadron Leader D'Arcy Power, M.C., R.A.F., Med. Serv., of a son (stillborn).

SKEET.—On March 11th, at Shrublands House, Berkhamsted, the wife of J. G. Skeet, M.R.C.S., L.R.C.P., of a son.

DEATHS.

BOW.—On March 5th, suddenly, Maxwell Ranken Bow, M.B., C.M. Edin., aged 53 years.

DENING.—On March 7th, at Manor House, Stow-on-the-Wold, Edwin Dening, M.R.C.S., L.R.C.P., aged 67 years.

GRAY.—On March 1st, at Inverleigh, Ellington Park-road, Ramsgate, John Henry Gray, M.D., formerly of Upper Tooting, S.W., aged 77 years.

HEPPENSTALL.—Clement Hoyle Heppenstall, M.D. Lond., Captain I.M.S. Killed by outlaws near Mohammet Khel, N.W.F. India, on December 11th, 1921.

MOORE.—On March 3rd, suddenly, at Oxford, Benjamin Moore, F.R.S., aged 55 years.

VANN.—On March 4th, at 9, Ravensworth-terrace, Durham, very suddenly, Catharine Gertrude, dearly-loved wife of A. M. Vann, M.R.C.S. Eng.

WALLER.—On March 11th, at Grove End-road, N.W., of cerebral hæmorrhage, Augustus Désiré Waller, M.D., F.R.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

The Services.

ROYAL NAVY MEDICAL SERVICE.

A. de B. Joyce to be Surg.-Lt.

ROYAL NAVAL VOLUNTEER RESERVE.

Temp. Surg.-Lt. F. L. Cassidi (late R.N.), and R. Hall to be Surg.-Lts.

ROYAL ARMY MEDICAL CORPS.

Maj. N. E. Dunkerton to be temp. Lt.-Col. whilst spec. empld.

The undermentioned temp. Capts. relinquish their commns., and retain the rank of Capt.: T. W. Mason, T. M. Walker, C. R. H. Crawford, A. R. Owst, J. C. Bawden, H. W. Street, and R. W. D. Hewson.

Temp. Lt. J. M. Semple relinquishes his commn. and retains the rank of Lt.

ARMY DENTAL CORPS.

Lt. (temp. Capt.) J. H. W. Fitzgerald to be Capt.

ARMY RESERVE OF OFFICERS.

Maj. and Bt. Lt.-Col. H. J. Parry, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

The undermentioned to be Lt.-Cols., and to commd. the Genl. Hosp. shown against their names: Majs. F. G. Proudfoot (from Genl. List, 3rd S. Genl. Hosp.) and E. J. D. Taylor (5th S. Genl. Hosp.) and Capt. R. Waterhouse (from Genl. List, 4th S. Genl. Hosp.).

Capts. D. J. Bedford (late R.A.M.C.) and J. T. Kyle (late R.A.M.C.) to be Capts.

Officers relinquishing their commns.: Capts. J. L. M. Symns (granted the rank of Maj.), J. Simson and K. J. T. Keer (retain the rank of Capts.), and R. B. D. Hird.

TERRITORIAL ARMY RESERVE.

Maj. J. S. Swain, having attained the age limit, is retired, and retains the rank of Maj.

Capt. (Bt. Maj.) G. Patton, from Genl. List, to be Capt. and Bt. Maj.

Notes, Short Comments, and Answers to Correspondents.

THE DOG AS A CARRIER OF DISEASE TO MAN.

BY THOMAS W. M. CAMERON, M.A., B.Sc., M.R.C.V.S.

IT seems opportune at this time, when comparative medicine is being so seriously considered by the medical profession as a subject of more than ordinary interest in the study of human diseases, that some details of the ordinary diseases of domestic animals in this country should be placed before the practitioner. The object of this article is to point out the dangers which man runs from the dog.

In the triple rôle of hunter, protector, and friend the dog was an almost essential aid to man in the early development of civilisation; in modern times, apart from hunting and sheep dogs, he is largely kept as a pet, and allowed a great degree of freedom. He is permitted to run unquestioned wherever he likes, to take what liberties he likes with the children, and to be far too familiar with his master and mistress. The great deal of damage done to stock and property by ownerless dogs is of less importance than the indirect harm they do by carrying disease. In this paper it is only possible briefly to consider a few of the more important diseases which, in temperate climates, may be carried in this way to man; they include tuberculosis, rabies, skin diseases and parasites, and the various intestinal worms.

Tuberculosis.

This disease is not infrequently met with in the dog—especially in large towns. Infection seems to be mainly by ingestion, though inhalation cannot be excluded as an infrequent means. Cows' milk and butchers' offal are undoubtedly the source in some cases, but modern authorities consider that the disease is generally contracted from man. Adult dogs are highly resistant, but puppies show a greater susceptibility. The dog's habit of eating and licking all sorts of rubbish—including expectorates—shows how great is the chance of infection, especially when the animal is living in the same house as a human being suffering from the pulmonary form of the disease. Tuberculosis may attack any organ in the dog as in other animals, but in most cases it develops in the lungs. The danger to man is obvious. The dog has at first a short dry cough, with occasional vomiting; later the cough becomes more frequent, and is accompanied by a muco-purulent discharge. Ascites and hydrothorax are very common symptoms; practically every case of ascites in the dog is referable to the tubercle bacillus. The disease in the dog can be confirmed by the use of Koch's old tuberculin, and the tuberculin test should be applied wherever suspicion is aroused, as when there is a tuberculous patient in the house.

Preventive measures are also obvious. Phthisical patients—especially in the street—must follow the dictates of hygiene. All known, or even strongly suspected, canine cases should be destroyed at once—the danger to human health is too great to take any risks. Prevention should be carefully considered; it is undesirable that pets should be kept at all by tuberculous people. Dogs should not be allowed to roam the streets indiscriminately and bring the disease into households otherwise free. Whether suspected or not, the dog should not be allowed to come into intimate contact with man by licking his master's face, by being kissed by his mistress, or by being allowed to clean up the children's plates after a meal.

Rabies.

Rabies, which is not at the moment present in this country, may attack practically all animals, but it is spread chiefly by the dog. During last year 23 cases occurred in Britain in domestic animals, and of these 22 were dogs. The disease may manifest itself as either "dumb" or "furious" rabies. Fortunately most of the cases occurring here were of the former type. There is a tendency, also, for the affected animal to run for long distances; for some unknown reason most of our cases ran westward and were brought up against the sea.

The disease manifests itself clinically, first of all, by a change in the dog's disposition. Some dogs become sullen and snappy; many become very affectionate and may fawn upon and lick people. The saliva is already infectious, and there is considerable danger to man—especially children—at this stage before there are any definite clinical symptoms. The virus cannot, of course, penetrate unbroken skin, but it can penetrate unabraded mucous membrane. It is not desirable to destroy a dog suspected of rabies—at least until the clinical symptoms are undoubted—as the development of a typical picture or the subsidence of all symptoms may have a considerable effect on the mind of the persons bitten. Many a dog, destroyed for suspected early rabies, has been found to be suffering from nothing more serious than worms! It is preferable to confine the dog in a secure place under the observation of the veterinary inspector.

All dogs entering this country are subject to a six months' quarantine on controlled premises under regulations of the Ministry of Agriculture. These regulations kept this country free from the disease from 1903 till 1918, and would have continued to do so had not the unsettled conditions induced by the war promoted smuggling. The dog which started the epizoötic was probably smuggled into this country by air. The present outbreak has been undoubtedly prolonged by people attempting to evade the muzzling orders and by the presence of the ownerless stray.

Skin Diseases and Parasites.

The dog suffers from four forms of ringworm, all of which can be, and some of which frequently are, transmitted to man. These are caused by the fungi *Trichophyton*, *Microsporum Oöspora*, and *Eidamella;* the last-named is very rare in this country. The dog also suffers from three forms of mange: follicular or demodectic, sarcoptic, and auricular. The last, due to *Otodectes cynotis*, is fairly common, but is unimportant and not transmissible to man. The demodectic form is caused by *Demodex canis*—a near relation to, but not identical with, the *D. folliculorum* of man. Cases of infection in man by the dog species have been reported, but are doubtful. The sarcoptic form, however, is transmissible to human beings. The disease occurs more frequently in the dog than is generally supposed, being very often diagnosed as eczema.

The dog is attacked by two species of lice, neither of which will live on man. One, *Trichodectes canis*, is of importance as the host of one of the dog tapeworms. Several species of fleas are found on the dog, including *Pulex irritans* and *Ctenocephalus canis*, both of which may be found on humans. Like the biting louse of the dog, they also form intermediate hosts of *Dipylidium caninum*. In tropical countries, the dog also harbours the chigger flea, which attacks man as well as the domestic animals; fortunately it is not found in this country. The flea is, of course, only a partial parasite—the young stages being found in the bedding, &c. The first step in ridding a house and a dog of these pests, is to clean or destroy the animal's bedding.

Roundworms.—The most important nematode occurring in the dog in this country is *Toxascaris limbata*, which occasionally occurs in man. The life-history is direct, but it probably, like *Ascaris lumbricoides*, passes through the lungs on its way to the intestine. The eggs of this parasite can be easily ingested by humans, especially children, from unwarranted association with dogs. This parasite, like all ascarids, may be found in widely separated parts of the body, and produces a toxin which frequently causes rabiform fits in puppies. Another roundworm, occasionally found in the dog in Britain, is *Dioctophyme gigas* (*Eustrongylus visceralis*). It is so rare, however, that the danger to humans is negligible. The only other nematodes which infect both dog and man are *Trichinella spiralis* and *Dracunculus medinensis*. The former, however, only affects the dog with great difficulty, and the latter only occurs in tropical countries, so neither will be considered here.

Trematodes.—About half a dozen of the flukes found in the dog have also been reported from man. None of these are present in Britain, and only one (*Opisthorchis felineus*) appears to be found in Europe.

Cestodes.—Of the tapeworms found in the dog in Britain two are of considerable importance to the medical profession. The double-pored tapeworm of the dog, *Dipylidium caninum*, has been reported from man a considerable number of times, but is probably more frequently present than is supposed. This worm, which grows to about 12 or 14 inches long, passes its cystic stage in the biting louse and in the two fleas mentioned above. The cystic stage is known as a cysticercoid, and a single insect may contain as many as 50 larvæ. The gravid segments have the power of movement, and they may leave the anus spontaneously and crawl into the hair where they dry and disintegrate. The eggs thus released are taken up by the intermediate host and develop into the cysticercoid stage. The infected insect is swallowed by the vertebrate host—either dog or man—and the tapeworm develops in a very short time. It may become full grown in a little over a month. The gravid proglottid in the dog is about ¾ inch long by about ¼ inch broad (or somewhat under these measurements), is oval in shape (resembling a cucumber seed), is reddish in colour, and has *two* genital pores, one on each lateral margin. This last feature distinguishes *D. caninum* from all the other tapeworms of the dog in this country except *D. sexcoronatum*. This last worm

has been mistaken for *D. caninum* in the past, and it probably is also a parasite of man.

It is easy to see how infection takes place in children, but as a number of the recorded cases have occurred in adults it is obvious that there has been undue intimacy with the dog. The animal has to lick himself to keep clean, and the flea may easily stick to the tongue and be so transferred to china, lips, or anything else touched by the dog. The damage done by this worm is probably slight, but as its head is equipped with numerous rose-thorn-shaped hooks, which are inserted into the intestinal mucosa, the possibility of secondary infection is obvious. Hall, giving statistics of this worm, notes that it has occurred 76 times in man (though it is probably much more frequent than this), and that as many as 238 individuals have been found in a single human host. In any case a single one is a most unpleasant companion.

The most dangerous of the animal parasites of the dog is *Echinococcus granulosus*—the cause of hydatid cyst in man and the domestic animals. The worm must occur in this country with some frequency, as the cystic stage is often seen in animals killed for food. The tapeworm, however, is seldom noticed, probably on account of its minute size. It is a typical tænia, but being composed of at most four segments, it is only ⅛ inch long. The gravid segment is excreted in the fæces, disintegrates, and is ingested by a suitable host, and their name is legion. The larva makes its way through the intestinal wall into the blood stream, and is carried to some suitable organ—frequently the liver, but any will do—where it develops into the well-known bladder-worm. The presence of the hydatid is always accompanied by danger to the host, as the cyst may reach the size of a child's head. The adult worm is only known naturally in the dog and various wild canidæ (though cats have been experimentally infected). Therefore infection in man can only come from the dog—from badly-washed vegetables, from the hands, from the dog's mouth, &c. The dog in turn can only be infected through the carelessness in the disposal of infected meat by uninformed persons. The danger of echinococcosis is probably the greatest that is run by man from the dog, as the symptoms in the infected animal are at most vague, and often absent; and there is no Pasteur treatment available.

Five other species of tænia infect the dog in this country, but none of them are in any way dangerous to man.

Dibothriocephalus latus is much more common on the continent than here, and as its cystic stage is passed in a number of fresh-water fish, there appears little to be feared from it in Britain.

Linguatula rhinaria is a degenerate arachnid, occasionally a parasite in the nasal passages of the dog in this country. Its larval stage is passed in various internal organs of the domestic mammals and of man. The larva subsequently leaves its cyst, wanders about the infected animal, and may cause its death. It is unknown how the larva reaches the dog. The adult has also been reported from man. The danger, once infected, is considerable; but, as the parasite is so infrequently noticed here, the chances of infection are not very great.

Conclusion.

There are many other parasites of much less importance to man inhabiting the dog. Many, too, are dangerous to the other domestic animals and inflict yearly a considerable loss to the stockbreeder and so indirectly to the community at large. Enough has been said, however, to show the serious dangers that we in this country run from the dog. Against most of these the remedy is obvious. The dog must be treated as a dog and not as a human being; he must be kept free of parasites, and all ailing animals in a household where tuberculosis is suspected to exist should be sent to be tested.

Edinburgh.

THE METRIC SYSTEM BY EASY STAGES.

WITH the object of accelerating the introduction of the international metric system, the Decimal Association now recommends gradual modification of the existing Imperial System of weights and measures. For instance, it is proposed that the existing table of avoirdupois weights should be simplified and closer coördination with the metric system secured by adopting the following interim table:—

7000 new grains = 1 metric lb.
16 new drams = 1 new ounce.
16 new ounces = 1 metric lb.
2000 metric lbs. = 1 metric ton.

The metric lb. and its parts would weigh about 10 per cent. more than the imperial lb., and two such metric lbs. would be exactly equal to 1 kilogramme. The suggested abandonment of all the present confusing intermediate denominations of weight between the lb. and the ton follows the practice successfully established in U.S.A. and some of the Dominions.

THE DURATION OF PREGNANCY.

P. W. Siegel, of Giessen, in the *Zentralb. f. Gynäkol.* Jg., 45, 1921, makes an interesting contribution to this subject from personal observations of 125 cases observed by himself in the Clinic for Women in this University town. War conditions enabled precise data to be obtained. This observer gives the medium duration of pregnancy a conceptione as 271·1 days, a menstruatione 281·75 days. In the case of boys the duration is from two to three days longer a conceptione. The percentage of cases of pregnancy which exceed the normal period of gestation, he puts at about 2 per cent. of all pregnancies, and he states that the gestation period may be extended to 320 days a conceptione or 331 days a menstruatione.

8TH (LONDON) SANITARY COMPANY, R.A.M.C. (T.A.).

RECRUITING for the London Sanitary Company having now commenced, an opportunity arises to draw attention to the need for men of good general education as recruits. The sanitary companies are specialist units, and the establishment embraces a large proportion of N.C.O.'s as inspectors. The course of training includes instruction in theoretical and practical sanitation and allied subjects, in addition to the normal T.A. features, including a period of 15 days in camp annually. The camp training may be excused where reasonable cause is shown.

Those interested may obtain further particulars, either by letter or personally, on application to the O.C. 8th London Sanitary Company, Duke of York's Headquarters (Right Wing), Chelsea, S.W. 3, any Monday or Wednesday evening between 6 and 8 P.M.

A WARNING TO MOTORISTS.

To the Editor of THE LANCET.

SIR,—A chauffeur was brought to me one morning recently, after receiving preliminary treatment over the week-end, who, some 36 hours previously, had tried to examine, by the light of a match, the battery of a car which had finished its day's run an hour earlier. A violent explosion occurred and some of the acid from the cells spurted into his right eye. When he was seen there was a considerable amount of contusion of the lids and globe, and a large area in the centre of the cornea was bare of epithelium. Fortunately, this healed over without becoming infected in the course of three days, and ultimately no very serious impairment of vision resulted. All cases might not, however, have so satisfactory a termination.

The story may serve as a warning to those who have cars not to inspect a car battery with a naked light. It does not seem to be generally realised that, under certain conditions, when the batteries have recently been charged and the gases formed cannot diffuse quickly enough, an explosive mixture may be formed by the hydrogen which is evolved and the surrounding air. In this case the batteries were placed under the chauffeur's seat, which is not a favourable position for allowing the dispersal of the gases.

I am, Sir, yours faithfully,
MONTAGUE L. HINE, M.D., F.R.C.S.

Weymouth-street, W., March 1st, 1922.

THE ST. JOHN AMBULANCE ASSOCIATION.

IN a fourth edition of "The White Cross of Saint John"[1] Colonel R. J. Blackham, M.D., a Knight of Grace of the Order of St. John and Assistant Commissioner of the St. John Ambulance Brigade, has amplified and brought up to date his short history of the Order and of the Association, first published in 1907. The first three chapters are devoted to the history of the Order from its establishment by Godfrey de Bouillon in 1099 after the capture of Jerusalem. The fourth chapter deals with the English branch of the Order, and the fifth with the foundation of the St. John Ambulance Association in 1877, following on the Geneva Convention in 1864, and on the impetus given to European Red Cross work during the Franco-Prussian war of 1870–71. The development of ambulance service, with its spread to the police, the mercantile marine, and the industrial community, is described, together with the district organisation of transport and nursing corps, and the work done during the war in creating and staffing auxiliary hospitals in England. A section is devoted to the famous St. John Brigade Hospital at Etaples, which was destroyed by German air-raids in May, 1918, and later rebuilt at Trouville. An account of the rise and development of the Association in India, and a chapter by Dr. N. Corbet Fletcher on "Notable Ambulance Dates and Facts," complete the body of this interesting book. Included as an appendix is a "Dissertation sur le Gouvernement de l'Ordre de Malte, par l'Abbé de Vertot, 1726."

[1] London: Dale, Reynolds and Co., Ltd.; Bombay: G. Claridge and Co., Ltd. 3*s.* 6*d.*, or Rs.3.

MEDICAL SECRECY.

AT the last meeting of the Vienna Doktorenkollegium the subject of medical secrecy was fully set forth on the medical side by Prof. K. F. Wenckebach and on the legal side by Dr. v. Kienböck, M.P. Prof. Wenckebach especially emphasised the point that the higher interest of society would not be served by breaking the doctor's silence. It is not for the doctor but for the parents to be satisfied of the suitor's state of health.

RESEARCH WORK AT KHARTOUM.

THE report for 1920 of the Gordon Memorial College, Khartoum, contains a section devoted to the valuable work carried out in the laboratories during that year. The time devoted to original research, it is stated, was seriously limited by the large number of routine examinations made, and by the employment of members of the staff upon special services only indirectly bearing upon research. The recent growth of the work at Khartoum necessitated either the extension of the central laboratories or the establishment of temporary or permanent research stations elsewhere. The latter alternative was adopted, and facilities were thus obtained for studying to better advantage local problems, medical, chemical, and entomological. Major R. G. Archibald, who directs the work of the Wellcome Tropical Research Laboratories, and was responsible for the process of decentralisation, is quoted in the report as stating "that such a scheme best suits the needs of a vast country with immense economic possibilities but possessing limited railway communications." In the Bacteriological Section about 3400 examinations were carried out during the year. A certain amount of research work was also done on subjects including urinary amœbiasis and kala-azar in the Soudan, tropical splenomegaly caused by a hitherto undescribed bacillus, the ætiology and pathology of juxta-articular nodes, and bacilluria as a cause of pyrexias of unknown origin in the tropics. The Chemical Section was similarly embarrassed by a sudden expansion of examination work.

MEDICAL AFFAIRS IN CEYLON, 1920.[1]

THE population of Ceylon on Dec. 31st, 1920, was estimated at 4,806,726, of whom 7428 were Europeans; these figures are "exclusive of military and shipping." The birth- and death-rates were 34·06 and 27·66 per 1000 respectively. The infantile mortality ratio in the 33 principal towns was 228 per 1000 births, showing an improvement on the ratios for the two previous years, 259 in 1919 and 252 in 1918. The accommodation at the De Sousa Lying-in Home, Colombo, has been increased, and during the year 51 midwives underwent training in that institution. Influenza was prevalent in most districts throughout the island but was much milder in type than in the two previous years. The hospital admissions for malaria numbered 16,538 (with 245 deaths), compared with 13,816 (with 253 deaths) in 1919, and 8154 admissions (deaths not stated) in 1918. There was an increase in plague (316 deaths, compared with 83 in 1919). In Colombo the deaths numbered 209. The percentage of infected rats was found to be double that of the previous year. On the other hand, cholera caused only 78 deaths, compared with 469 in 1919; 31 of these, out of 50 cases, occurred at Karunkoditivu, in the Eastern Province. The source was not detected, and the epidemic was of the chain type (by contact infection), not explosive (by water). Of small-pox there were 126 cases, of which 104 were treated in the Hospital for Infectious Diseases at Colombo; 22 of these died, 19 of whom showed no evidence of vaccination. There was an increase in enteric fever, 1025 cases being admitted to hospital, compared with 770 in 1919; 319 cases occurred in Colombo and 274 in the Western Province. It is stated that "many cases undoubtedly occur which are not recognised or reported as such." The lepers treated at Hendala Asylum increased in number from 412 to 485. A new asylum on Mantivu Island, near Batticaloa, on the east coast, was to be ready for use in 1921. Ankylostomiasis cases increased in number from 9784 in 1919 to 11,414 in 1920, the mortality figures being 1614 and 1943 respectively; but these figures only refer to uncomplicated cases of the disease, a large number are registered under other headings.

Field work was carried out in numerous districts throughout the island; of 126,529 persons treated, 96,477 were cured. In the years 1916–20 these numbers have amounted in all to 307,932 and 245,334 respectively. The continued high price of rice interfered considerably with work in the villages; nevertheless good progress was made, and in and around Minuwangoda (about 20 miles from Colombo), which town was selected wherein to commence the work, "the campaign was received by the villagers with much enthusiasm." The school children were treated at school, with the active coöperation of the teaching staff, and it was found that, after this, "it was a regular thing for villagers to offer themselves for treatment in increasing numbers with each succeeding week." Lantern lectures and distribution of literature were followed by good results. The admissions for yaws increased from 5270 in 1919 to 6189 in 1920, the deaths being 23 and 24 in these years respectively. By far the largest number of cases (1275) were admitted in the Central Province; in the Northern only 157; but as the populations of provinces are not stated in this report, the actual severity of prevalence, in this as in other instances, cannot be estimated from these figures. Salvarsan treatment was found to be most satisfactory, two or three injections usually effecting a cure. There were 617 cases of cancer and sarcoma under treatment (with 76 deaths), compared with 401 cases and 71 deaths in 1919. Of 2655 admissions for pulmonary phthisis, 1186 occurred in the Western Province, compared with 1175 out of 2656 in 1919.

School Medical Inspection.

School medical inspection was started in Colombo in 1919. In the English schools 4523 children were inspected in 1920: defective vision (312), dental caries (220), enlarged tonsils and adenoids (140) were the most frequent conditions requiring treatment. In the vernacular and Anglo-vernacular schools, out of 7232 children examined there were found of enlarged tonsils and adenoids 357 cases, of defective vision 337, and dental caries 304. Steps are being taken to form clinics for the treatment of these children, the provision of school nurses, and for the furtherance of school hygiene in general. This report is submitted by Dr. G. J. Rutherford, Principal Civil Medical Officer and Inspector General of Hospitals, and forms a portion of the Fourth Section of the Ceylon Administration Reports, which includes education, science, and art.

[1] Ceylon Administration Reports. Report of Principal Civil Medical Officer and Inspector-General of Hospitals for 1920. Colombo. 1921.

THE WAR WORK OF THE SCOTTISH BRANCH, B.R.C.S.

THE report on the war work of the Scottish branch of the British Red Cross Society, addressed to the Scottish Council by Sir George Beatson, chairman of the branch, is divided into three sections. The first section is devoted to the general medical work of the war, the rôle of the Red Cross in furnishing supplementary aid to the naval and military medical services, and its value as an association for the coördination of voluntary effort. The second section contains the record of work done by the Scottish branch in the directions of transport, hospital accommodation, and provision of clothing, stores, &c. Three complete convoys were raised, equipped, and despatched to France, where their valuable services won high praise; various gifts of ambulances were also made to other branches of the British and Allied Red Cross organisations, and much work was done in the supply of dental cars, motor-car laboratories, X ray wagons, cot ambulances for the navy, motor-ambulance launches, and equipment of the hospital ship *Saint Margaret of Scotland* for use in the Mediterranean. A hospital at Paris and a part of No. 11 Stationary Hospital at Rouen, contained 450 beds; two general Red Cross hospitals (Bellahouston and Woodside Central, Glasgow) and 160 auxiliary hospitals in Scotland, comprised 8184 beds, making, together with 50 beds in the Ralston Hospital for the Paralysed, a total of 8684 beds provided by the branch. After a brief reference to the many minor activities of the branch, a last short section deals with its future, urging the maintenance of the organisation and the direction of its efforts towards various peace services. The report contains clear diagrams illustrating the path traversed by sick and wounded from trench and battleship to hospital. It is a brief chronicle of a great amount of valuable war work.

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